Volume 94 Number 5

STEEL

For forty-eight Years—IRON TRADE REVIEW

PRODUCTION • PROCESSING • DISTRIBUTION • USE

The Week in Perspective

CHOICE tonnage markets and price concessions being relegated to the past, steel has come to recognize the succession of character and integrity to the throne of aggressive merchandising. The cloak of secrecy has been traded for a badge of honor! p. 20

Ten years ago the steel industry abandoned Pittsburgh-plus under pressure; now government agencies appear to be turning on the heat against multiple basing points. p. 14

Definite proof of industrial recovery is reiterated by a prominent steel executive, who sees 1934 a "materially better year" than 1933 for steel. p. 16

Survey of half a century's business activity in the Pittsburgh district strikingly reveals the depth of the depression of the thirties. pp. 12, 13

GRADUALLY folding up its show carnivals for another year, the auto industry is digging into production problems, in the effort to work off dealers' bulging order books. Optimism of a past era radiates from Detroit. p. 15

On the Pacific coast, structural awards are running far ahead of last year's totals. p. 59

Hope springs eternal, and European steel interests, comforted by gains in business in 1933, apply this adage to 1934 prospects, ensnared though they are in a maze of political problems. p. 19

Interested in the design of steel mill rolls? There's a new book just published which will help you. p. 32

Records for 24-hour rolling of wide sheet tonnages are falling. Recently Otis at Cleveland set an 1800-ton mark; last week Wheeling Steel Corp. rang the bell at 2200 tons. p. 56

With business booked in 1933 in some cases double that of 1932, annual financial reports of steel producers are fading from deep red again into the black. p. 10

Anniversaries: Cincinnati Milling Machine Co. celebrates its fiftieth this year; W. W. Sly Mfg. Co., Cleveland, its sixtieth. p. 60

Unforeseen curtailments, probably only temporary, have lowered the national steel operating rate to 33 per cent, with an increase in prospect this week. p. 13

INDUSTRY never slackens its demand for higher strength materials. To manufacturers of cold-headed products, this means new tool and die problems to lick. Choice of suitable die steels and correct heat treatment are the answers. p. 23

In England they like their whiskey clear, so monel metal burning pans are used for preparing caramel coloring matter for the schnaps. p. 34

Farewell to clothespins, says the housewife who uses a new type of galvanized steel wire clothesline which, instead of being wound up, is "folded" up when the wash is dry. p. 30

Are you attending our weekly classes in the plastic forming of metals? Interesting data on wire drawing tests this week. p. 27

REPORTS are current of a tie-up between General Motors and the Corrigan-McKinney and Newton Steel interests, the former having offered to place half its steel requirements in the next two years with the latter in exchange for option to buy these two companies. p. 15

Formidable foe of the cold header is surface flaws in wire. p. 24

Parachute jumpers rely for safety upon 3.5 per cent heat-treated nickel steel fittings on their 'chutes. p. 34

Steel Operations Profitable; Bethlehem Wholly in Black

FIRST returns on the financial experience of iron and steel producers in the fourth quarter of 1933 show profits from operations.

In general, whatever deficits are being reported are bookkeeping ones—the excess of charges for depreciation and depletion over actual profits.

Few of the larger producers apparently will turn in a profit for the entire year, the black of the fourth quarter being unable to wash out the red of the preceding three quarters.

Bethlehem, largest of the producers to report, came completely out of the red last quarter. Jones & Laughlin made an operating profit only. Gulf States, which reported last week, published a net profit for the whole year.

STEEL's comparison of earnings, related to production, is necessarily postponed until the next issue because the United States Steel Corp. does not report until Tuesday.

¶Bethlehem Steel Corp.'s fourth quarter was the best in more than two years, not only an operating profit but also net after charges being earned.

After depreciation and depletion, Bethlehem's net for the fourth quarter was $629,671, an improvement of more than $900,000 over the loss of $283,097 experienced in the third quarter.

For all 1933 the showing is a deficit of $8,735,723, which was less than half the loss of $19,404,431 in 1932.

Gross sales and earnings of Bethlehem aggregated $121,745,344 in 1933, compared with only $98,467,226 in 1932. New business booked during the year, at $158,861,156, was almost double the volume of 1932.

Cash and liquid securities on Dec. 31 totaled $46,888,841, a decline of a scant $100,000 during the year. The net reduction in funded debt during the year was $4,955,781.

The government-financed rail buying program by which the carriers of the country were to bring out 800,000 tons of rails and several hundred tons of fastenings has been a pronounced disappointment to the steel producers thus far, said E. G. Grace, Bethlehem president.

Mills Note Scant Effect

Comparatively little of this tonnage has yet reached steel mills, despite the fact that rail producers lowered their price of $36.37½ per ton at the insistence of Railroad Coordinator Eastman. The limited tonnages placed for rails and fastenings and to a large extent railroad equipment have been firmer by railroads buying without government assistance.

Defending the basing point system under the steel code, which he said had advanced merchandising methods of steel, Mr. Grace declared the system to be to the advantage of the small buyer of steel for fabricating. He steadfastly defended the steel code as an instrument of fair competition, eliminating illegal practices in steel selling and buying.

Mr. Grace refused to take a view as to the length of operation of the steel code, saying changed conditions would have an influence. He took a stand that restrictions in the securities act were a detriment to the flow of funds to the capital goods industries.

He lauded the steel code as an instrument which had eliminated many damaging practices in the industry. Until the natural flow of financing for private industry is attained, progress in industrial development requiring steel will be retarded, according to Mr. Grace.

¶Jones & Laughlin Steel Corp., Pittsburgh, fourth largest producer, greatly reduced its loss in the fourth quarter, the deficit after charges being $626,418, compared with $1,143,917 in the third quarter.

For 1933, net loss is indicated as $5,366,997 after depreciation, depletion and bond interest, against a loss of $7,910,149 in 1932. In 1933, however, an operating profit of $166,227 was realized, against a deficit of $2,830,098 in 1932.

Reserves for depreciation and depletion increased from $4,628,168 in 1932 to $5,137,323 in 1933. Bond interest declined from $451,883 to $395,901. Surplus on Dec. 31 was $49,881,293; at the close of 1932 it was $56,685,951.

¶Virginia Iron, Coal & Coke Co., Roanoke, Va., reports net loss of $22,978 in the fourth quarter. For 1933 the indicated net loss is $84,519, compared with loss of $33,352 in 1932.

¶A. M. Byers Co., Pittsburgh, reports net loss, after charges, in the fourth quarter amounting to $256,672, slightly lower than the deficit of $285,043 in the same quarter of 1932.

¶Fostoria Pressed Steel Corp., Fostoria, O., reports net profit of $914 in 1933 after all charges, including writeoffs for closed bank losses, compared with profit of $8352 in 1932. All officers and directors were reelected.

¶Caterpillar Tractor Co., Peoria, Ill., made a profit of $302,716 in 1933, contrasted with loss of $1,616,872 in 1932. Liquid assets of $6,337,713 on Dec. 31 exceeded the total indebtedness. Inventories as of Dec. 31 totaled $8,804,222. Sales for the year amounted to $14,408,002, against $13,258,505 in 1932.

¶Dominion Bridge Co., Montreal, Que., and entirely owned subsidiaries for the fiscal year ended Oct. 31 had net profit of $475,769, compared with $766,774 in 1932, and $1,647,817 in 1931.

¶Eaton Mfg. Co., Cleveland, has declared a dividend of 25 cents a share on common stock, payable Feb. 15 to holders of record Feb. 5.

¶General Electric Co. on Dec. 31 listed a record number of stockholders —188,316. This was an increase of over 7000 during the year. In 1923 General Electric had 38,484 stockholders, and in 1929 it had 60,374.

Bethlehem's 1933 Loss Is Less than Half 1932 Deficit

	Fourth Quarter 1933	Third Quarter 1933	Year 1933	Year 1932
Total income of the corporation and its subsidiary companies	$5,790,023	$4,879,146	$11,472,584	$ 594,138
Less—Interest charges	1,692,586	1,688,534	6,702,051	6,896,980
Balance	$4,097,437	$3,190,612	$4,770,533	*$6,302,842
Less—Provision for depletion and depreciation	3,467,766	3,473,709	13,506,256	13,101,589
Net income for the period	$ 629,671	*$ 283,097	*$8,735,723	*$19,404,431

*Deficit.

Transportation

LITTLE immediate effect on the railroad equipment situation is seen resulting from the recommendation of Railroad Co-ordinator Eastman to the ICC that consolidation of railroads be effected now by stock transfers.

The ultimate solution of the railroad question is government ownership and operation, according to Mr. Eastman, but the country is not "financially in a condition to stand the strain of an acquisition of these great properties."

Any merger would tend to make the supply of railroad rolling stock more flexible and hence diminish the prospect of replacements. But at the moment so little business is coming out that the equipment market would not be disturbed.

¶A survey by Mr. Eastman shows that 55.5 per cent of stored freight cars are immediately serviceable, 4.4 per cent require repairs costing $350 per car, while the remaining 40.1 per cent can be used only for certain commodities. Only 44 per cent of all cars inspected were constructed since 1920.

As to stored locomotives, 78.7 per cent are ready for operation, and 21.3 per cent need repairs averaging three days and costing $150. It is shown that 41.9 per cent of locomotives were built prior to 1919, and an additional 39 per cent are 13 to 23 years old.

¶As had been expected earlier in January (STEEL, Jan. 15, p. 13) Carnegie Steel Co. on Jan. 25 dispatched its one hundredth tow of steel products down the Ohio river. The I. LAMONT HUGHES, flagship of the fleet, had 11 barges in tow, carrying 8000 tons of steel for Memphis, Tenn., and New Orleans delivery. A group of Carnegie Steel Co. officials and invited visitors attended the ceremonies at the tow's departure, went down the river part way and were luncheon guests of the company enroute.

The tow left Pittsburgh at 10:30 a.m., Thursday, with five barges made up of two National Tube Co. loads, and three from the American Sheet & Tin Plate Co. and Carnegie Steel Co. En route, six more barges were to be picked up from American Bridge Co. at Ambridge and Carnegie's Mingo Junction, O., plant.

The Carnegie river fleet, organized in 1917, is believed to have barged more than 750,000 tons of steel out of its Pittsburgh mills to southern points, although when the fleet was formed shipment of coal by river was its primary object.

Over the 17 years of the fleet's existence, the fastest trip made was No. 77 when the distance from Pittsburgh to New Orleans was negotiated in 10 days and 20 hours. However, elapsed time of under 20 days is considered good. The first steel products voyage, 8435 tons in 1922, required 34 days from Pittsburgh to New Orleans.

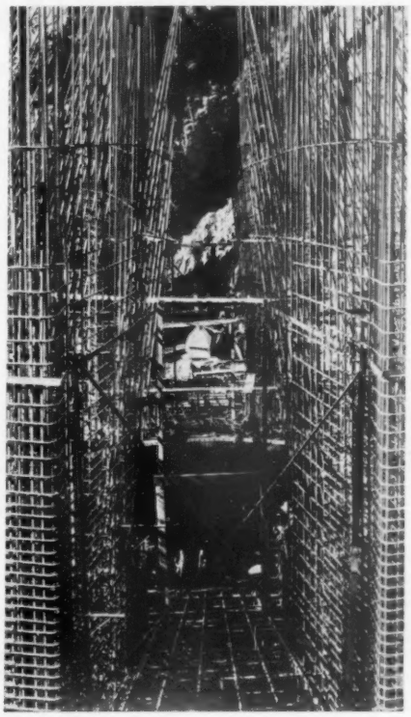
¶Great Lakes regional advisory board, including Michigan and a belt along Lake Erie from Toledo to Buffalo, estimates carloadings of freight in the first quarter at 223,958, or 13 per cent over the actual 197,628 of the first quarter of 1933. Estimated carloadings for various products for the first quarter of 1934, compared with actual for a year ago are: Iron and steel, 23,105 and 18,663; machinery and boilers, 1892 and 1768; automobiles, 56,287 and 44,250; coal and coke, 15,185 and 13,830.

New Capacity

THREE producers of sheets—one in the East, one in the Pittsburgh district and the third in the Middle West—are reported planning to expand their facilities for making wider sheets.

An eastern interest is also reliably reported planning to install a continuous strip mill.

Construction of a hot and cold-rolled strip mill in the Buffalo district is rumored.



Acme Photo

BOULDER DAM'S HEART OF STEEL: When the intake towers are completed only concrete will show, but without this reinforcement they would crush like paper before the vast pressure behind them. The tower depicted is on the Nevada side of the dam. The bars are 1¼-inch thick

Foreign

UNITED STATES imports of iron and steel products in December totaled 31,310 tons, compared with 28,979 tons in November, and 29,390 tons in December, 1932.

For all 1933, imports totaled 414,790 tons, against 378,282 tons in December, 1932.

December export statistics and complete details on exports and imports for December will be published in the Feb. 5 issue of STEEL.

¶Even though the "old gray mare ain't what she used to be," trade in horse and mule shoes continues large. In the first 11 months of 1933 the United States imported 705,065 pounds valued at $25,441, chiefly from Germany, and exported 313,460 pounds, or $22,018 worth, principally to the Philippines. Incidentally, a Milan, Italy, merchant wants to buy nonskid American horeshoes.

¶Iron and steel division, department of commerce, Washington, reports an inquiry from Seville, Spain, for American pipe and fittings; from Panama for 55-pound rails in 33-foot lengths, and reinforcing bars; from Singapore for galvanized corrugated and plain sheets, spikes, nails, galvanized barbed and plain wire, wire nails and wire netting; from Brussels for galvanized and black sheets; and from Penang for galvanized wire, wire nails and galvanized nails.

¶Also going nationalistic, Egypt has purchased wire nail making machinery from Germany and is inquiring for nail wire from the United States, according to Commercial Attache C. E. Dickerson Jr., at Cairo, Egypt.

Institute

AMERICAN IRON AND STEEL INSTITUTE announces the filing of the following prices:

On alloys 0.15 per cent carbon, 16 per cent chrome, and 6 per cent nickel (all maximum) cold-rolled strip is reduced from 27c to 24c, hot-rolled strip from 21c to 17c, and re-rolling billets from 15c to 12c.

A special grade of alloy bars of 0.40 per cent carbon, 3.80 per cent silicon, and 2.20c per cent chrome is reduced to 5.02c, Bethlehem.

On an alloy with carbon 0.12 per cent maximum, chrome 12 to 15 per cent maximum, and tungsten 2½ to 3½ per cent, bars are 24c, base, plates 27c, and sheets 32c.

For 0.20 per cent carbon 12 to 14 per cent nickel, 5 to 7 per cent manganese and 1 per cent chrome, bars are 20c, base, plates 20c, and sheets 25c.

For carbon 0.10 per cent, chrome 15 to 18 per cent, and silicon and copper each 1 per cent, cold-rolled strip steel is 23c, base.

For 0.12 per cent carbon, 15 to

18 per cent chrome, and 2½ to 3½ per cent tungsten, bars are 26½c, base, plates 29c, and sheets 36c.

Hot rolled stainless steel strip with chrome 15 to 18 per cent, silicon and copper each 1 per cent, and carbon with a maximum of 0.10 per cent is advanced 17c to 17½c per pound effective Feb. 1.

¶Jackson, O., becomes a base Feb. 3 for foundry and malleable iron at $19.25, and basic at $18.75.

¶Gary, Ind., was made a base Jan. 23 on steel plate seconds, sheared into rectangular shapes in random sizes and gage, with no quality guaranteed and no single piece to contain over 35 square feet, at 1.15c. For the same description except that plates are sorted to gage, the price is 1.25c.

¶As of Jan. 22, merchant bar iron ceased to be quoted at Burnham, Pa., and refined bar iron at 1.90c per pound was substituted.

¶Its provision for open price appears to be "the most important and indispensable commercial feature" of the NRA steel code, according to Walter S. Tower, executive secretary of the American Iron and Steel institute, as the industry enters the sixth month of its operation under the code.

"Without the open price provision of the steel code, the industry would be practically helpless in making any effective contribution to the administration's recovery effort," said Mr. Tower. "This is true because conditions of fair competition and stable markets have been imposed in place of the disastrous market conditions which prevailed throughout the lean years."

First beneficiary of the code has been labor, according to Mr. Tower. From June to November the direct outlay for wages per ton of finished steel products increased 70 per cent. In June, when 1,870,000 tons of finished steel was rolled, mill labor received $24,434,000, or $13 a ton. In November, output was approximately 1,110,000 tons and wages $24,838,000, or $22 a ton.

Second beneficiary of the steel code has been the consumer through the banishment of speculation in prices and elimination of "secret practices which have long been prevalent in the steel industry."

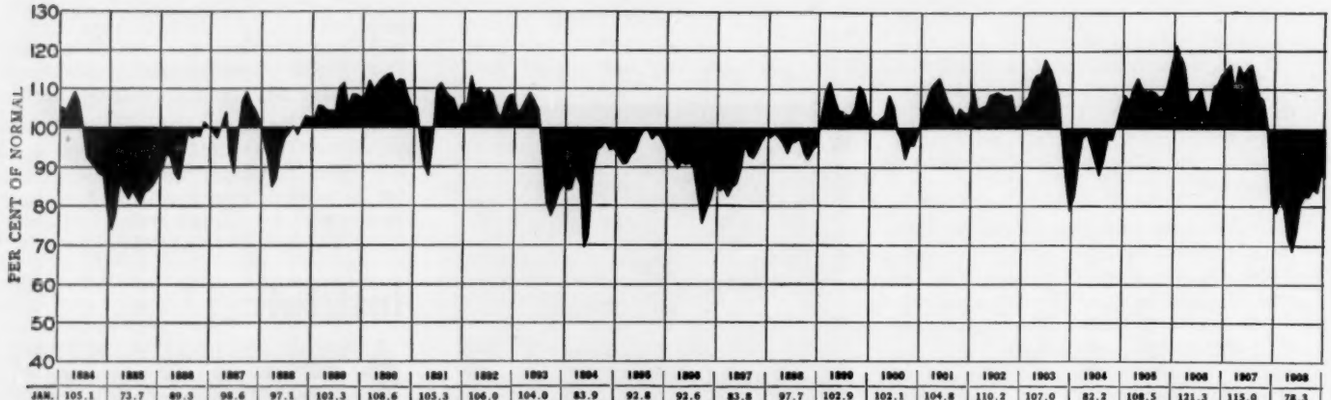
"Competition has not been lessened in the industry by the open price policy but rather has been intensified and turned into new and more healthy and constructive channels," declares Mr. Tower.

Codes

IMPORTERS of manganese ore would be prohibited from selling ore below the prevailing price in this country under an amendment proposed to the pending code for the manganese industry by Bernard S. Baryon, counsel for the American Manganese Producers association.

At the code hearing in Washington Friday, Deputy Administrator

Fifty Years of Business Activity



	1884	1885	1886	1887	1888	1889	1890	1891	1892	1893	1894	1895	1896	1897	1898	1899	1900	1901	1902	1903	1904	1905	1906	1907	1908
JAN.	105.1	73.7	89.3	98.6	97.1	102.3	108.6	105.3	106.0	104.0	83.9	92.8	92.6	83.8	97.7	102.9	102.1	104.8	110.2	107.0	82.2	108.5	121.3	115.0	78.3
FEB.	104.5	77.5	93.4	97.4	92.5	105.9	112.0	98.3	113.2	104.8	84.3	90.7	91.8	84.7	98.9	109.4	101.8	107.0	104.8	108.2	91.5	106.8	118.1	116.5	81.4
MAR.	107.1	86.1	92.6	100.5	84.9	103.4	109.9	99.2	109.0	107.0	88.3	90.9	89.6	82.3	97.7	111.9	102.3	110.4	105.5	113.2	97.5	110.8	115.1	109.8	79.1
APR.	109.2	83.4	88.2	104.1	86.8	104.4	111.3	87.6	110.2	109.1	85.8	93.0	91.2	84.8	96.4	107.7	103.5	111.2	105.8	113.5	98.6	112.9	106.6	116.1	72.1
MAY	106.8	81.5	86.6	93.2	93.3	104.4	112.8	96.2	108.1	106.9	89.5	94.0	90.5	85.9	93.8	104.6	108.5	111.9	108.6	114.0	95.3	110.1	107.0	113.8	68.5
JUNE	100.0	83.6	93.6	89.3	97.1	104.3	113.2	110.1	109.9	104.9	73.4	97.3	91.0	89.6	96.3	104.1	105.6	109.9	108.8	117.7	91.6	109.3	108.9	115.5	73.0
JULY	92.6	83.0	98.7	99.1	98.7	110.3	114.0	111.3	108.8	94.6	88.7	99.6	90.0	95.6	96.7	103.3	99.8	106.9	109.3	115.5	87.9	109.6	110.1	116.8	80.4
AUG.	91.0	80.3	97.5	107.0	100.2	111.5	111.4	109.1	104.1	80.7	94.4	99.7	82.5	93.2	97.4	103.3	97.2	105.6	108.5	112.4	91.5	109.2	104.6	111.4	82.5
SEPT.	89.7	83.6	98.1	109.3	98.2	105.6	113.2	107.7	103.4	77.3	95.2	97.1	75.7	92.3	93.7	105.4	91.8	102.5	108.2	108.2	97.4	108.0	104.0	108.3	82.4
OCT.	88.3	84.1	98.0	106.0	106.9	108.5	113.1	107.2	106.0	80.1	96.8	98.6	79.1	94.2	92.0	110.7	95.8	105.2	108.6	100.2	97.2	108.3	110.7	107.5	84.4
NOV.	87.6	85.3	101.4	104.4	103.0	108.3	108.0	103.6	108.0	83.7	94.4	97.8	81.4	96.6	94.4	109.2	95.7	104.0	103.6	85.8	100.8	111.1	111.5	100.2	83.5
DEC.	79.3	87.5	100.1	102.0	102.6	107.7	105.2	106.0	108.6	85.1	94.8	95.9	85.9	98.4	95.4	104.0	98.4	103.8	104.9	78.7	105.5	116.1	113.8	80.6	88.4
AV.	96.8	82.4	94.7	100.9	96.3	106.6	110.9	102.7	107.9	94.8	87.4	95.6	86.8	90.1	95.9	106.4	100.2	106.9	107.3	106.1	94.8	110.1	111.0	109.3	79.5

Prepared by the Bureau of Business

THE Pittsburgh district, as defined for this index, is approximately the area embraced by the following 11 counties of western Pennsylvania: Allegheny, Armstrong, Beaver, Butler, Fayette, Greene, Indiana, Lawrence, Mercer, Washington, and Westmoreland.

The index is based on data for three major fields of business: Industrial production (manufacturing and mining), shipments (railroad shipments, 1884-1918; water and railroad shipments after 1918), and trade. Four series of data were used for the period January, 1884—December, 1890; five series for the period January, 1891—December, 1918; and 16 series for the period January, 1919—October, 1933. Each series was adjusted for seasonal variation and for long-time trend, or growth. Where necessary, adjustments were made also for price changes. The adjusted series were then combined into a weighted composite index. The general index, charted above, shows the extent of fluctuation above and below normal.

Although the constituency of the index is not uniform for the whole period 1884-1933, comparability was maintained as nearly as possible. The comprehensive post-war index (described in the March, 1932, issue of the *Pittsburgh Business Review*) was used as a guide in the construction of the index for the earlier periods. As a test, the index based on the less comprehensive pre-war data was computed on the basis of the same series for the post-war period and compared with the more comprehensive post-war index; the correlation was found to be very close.

Weights used in the index for the period January, 1884

W. A. Jannsen presided. Manganese operators from Virginia to Montana were represented and presented evidence concerning conditions in the domestic industry.

William H. Edmonds, speaking for the consumers' advisory board, urged the deletion of some provisions of the fair trade practice section, pointing out that there was an apparent attempt to suppress fair competition within the industry.

J. Reed Dennison, O. J. Graham and Montis Smithson, of the Piedmont section of Virginia, and John Cole, operator of the nodulizing plant in Butte, Mont., testified in regard to the minimum wages and maximum hours obtaining in their respective sections of the country.

George E. Dix, New York, representing the Steel Union Co., and Thomas H. Brown, of the American Federation of Labor, were also among those testfying.

¶Revision of certain provisions of the cast iron soil pipe code, which has been approved and is in effect, was asked by National Association of Master Plumbers at a hearing in Washington last Thursday. The principal objection of plumbers was that under the terms of the code they believe they are being discriminated against in the matter of discounts.

¶A basic code for the machinery and allied products industry was approved at a meeting of MAPI in Cleveland, Jan. 19, and will be filed shortly with NRA. Separate hearings have been held on about 40 codes for industries which are regarded as supplemental to the basic MAPI code.

¶Donald Richberg, chief counsel for NRA, has issued a warning that antitrust laws still are in effect and no monopolistic practices will be permitted under codes.

¶Code hearings Feb. 1, quicksilver and drop forging industry; Feb. 2, galvanizing, machine screw, machine screw nut, cap screw and wood screw industries; Feb. 6, cut tack, wire tack and small staple industry.

Production

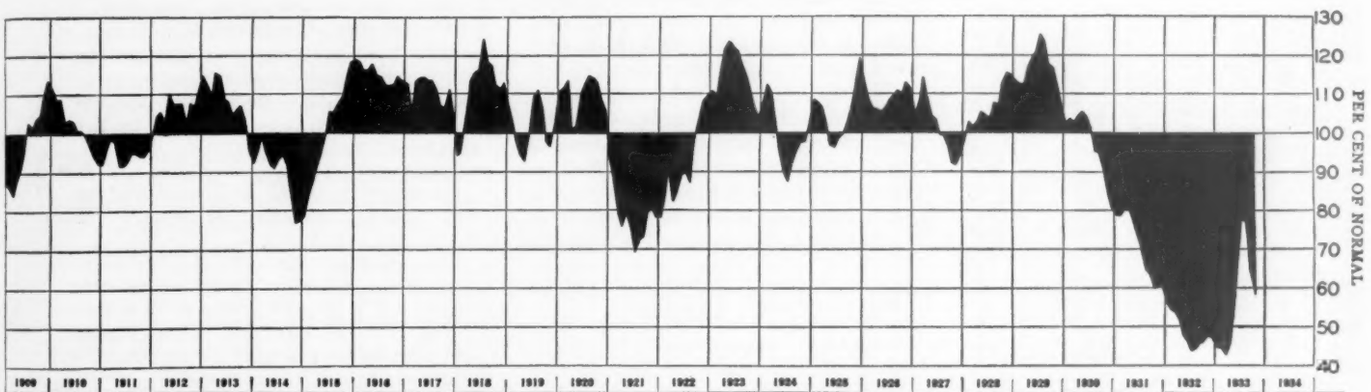
UNEXPECTED curtailment, especially at Youngstown, lowered the country's steel rate last week to 33 per cent, whereas a slight increase had been expected. The American Iron and Steel institute forecast for last week was 32.5 per cent.

If schedules made at the close of last week hold, this week should supply an increase. The rate in New England and at Pittsburgh will be definitely down. Increases are scheduled in the Youngstown, eastern Pennsylvania and Buffalo districts. Chicago, Cleveland and Detroit producers will at least hold their own, and may increase. No change is forecast in the Wheeling and Birmingham districts.

Detroit: A local steelworks has reduced its active open-hearth furnaces to four, after being at capaci-

(*Please turn to Page* 56)

in the Greater Pittsburgh District



1909	1910	1911	1912	1913	1914	1915	1916	1917	1918	1919	1920	1921	1922	1923	1924	1925	1926	1927	1928	1929	1930	1931	1932	1933	1934	
87.1	110.9	93.1	98.8	114.9	92.5	78.3	119.1	112.9	94.1	107.1	110.2	94.6	78.0	110.7	107.7	108.3	112.9	104.8	99.0	113.5	102.4	78.8	55.6	44.5	....	JAN.
86.1	108.5	95.7	104.2	112.1	95.1	84.0	118.4	105.0	94.9	103.0	111.1	88.7	83.9	109.5	112.6	107.6	108.5	108.2	103.8	112.6	103.8	78.6	54.1	44.2	....	FEB.
84.0	108.6	98.6	105.2	109.1	99.9	87.4	116.2	113.1	104.4	97.9	113.2	79.0	91.2	116.2	110.1	106.2	106.4	114.2	101.3	112.6	103.9	80.0	53.5	42.5	....	MAR.
88.0	103.8	98.0	102.5	115.5	95.0	91.3	116.4	114.0	113.2	94.4	100.8	75.7	82.4	121.6	102.4	102.0	106.0	108.2	102.6	117.0	104.6	80.4	51.4	45.0	....	APR.
90.3	103.3	91.8	110.1	114.6	92.0	94.7	118.0	114.3	115.4	92.7	101.6	79.2	84.7	123.5	95.5	96.9	105.6	104.4	105.1	119.7	105.7	77.1	47.5	53.5	....	MAY
96.1	103.0	91.8	107.7	108.7	91.0	99.1	115.0	113.3	116.4	100.2	109.8	75.3	89.1	122.0	90.0	96.1	106.5	103.4	104.3	120.9	104.1	72.7	46.3	65.7	....	JUNE
103.9	100.8	92.6	107.5	108.0	93.5	105.1	114.7	113.4	124.1	109.4	112.5	69.0	89.9	130.9	87.4	98.3	108.4	99.6	103.7	125.2	100.6	69.9	43.5	77.4	....	JULY
101.6	100.6	94.9	107.6	104.7	94.4	105.2	112.3	110.8	118.6	111.6	114.6	72.4	87.2	117.8	91.9	99.5	109.9	99.4	107.8	123.4	95.5	64.6	44.0	77.0	....	AUG.
103.9	99.5	95.0	102.4	106.0	91.7	107.5	112.2	106.9	117.7	106.7	114.0	73.1	98.3	114.3	95.3	102.8	110.9	96.9	107.3	117.8	94.8	63.1	45.4	64.8	....	SEPT.
104.7	97.7	94.2	107.7	107.1	83.4	109.6	112.6	106.5	112.4	97.8	113.0	79.4	103.2	110.7	97.5	106.9	110.1	92.2	112.8	116.8	91.4	59.8	45.9	58.3 P.	....	OCT.
110.3	94.2	94.1	105.9	103.4	76.8	114.9	114.3	111.1	111.1	96.7	108.7	80.2	108.4	106.1	97.8	113.7	113.0	91.7	113.2	113.1	84.4	60.2	47.5	....	....	NOV.
113.6	92.2	95.7	111.0	95.6	77.2	118.2	113.2	105.0	112.9	102.5	105.8	78.0	109.6	103.8	102.2	119.3	111.3	94.4	114.9	106.6	80.4	60.3	46.9	....	....	DEC.
97.4	101.8	94.5	106.0	108.3	90.2	99.6	115.2	110.5	111.3	101.7	109.0	78.7	92.1	114.7	99.2	104.7	109.1	101.4	106.4	116.5	97.5	70.5	48.5	....	....	AV.

Research, University of Pittsburgh

—December, 1918, are as follows: (a) 48 per cent for production, consisting of 32 points for pig iron production, 10 points for bituminous coal production, and 6 points for Connellsville coke production (pig iron was substituted for coke for the period January, 1884, to December, 1890, when monthly data for coke were not available); (b) 19 per cent for gross earnings of feederline railroads, to represent shipments; and (c) 33 per cent for bank clearings, adjusted for changes in the general price level, mainly to represent trade.

Weights used in the index for the period January, 1919—October, 1933, are as follows: (a) 51 per cent for production, consisting of 10 points for pig iron production, 15 points for steel ingot production, 9 points for bituminous coal production, 10 points for industrial sales of electric power, 5 points for man-hours worked in manufacturing, and 2 points for slaughterhouse activity; (b) 19 per cent for shipments, consisting of 4 points for carloadings of coal, 2 points for carloadings of coke, 6 points for carloadings of iron and steel, 5 points for carloadings of other commodities, and 2 points for river tonnage; (c) 24 per cent for trade, consisting of 5 points for wholesale sales, 12 points for retail sales, 5 points for new motor car registrations, and 2 points for produce receipts; and (d) 6 per cent for bank debits, adjusted for changes in the general price level, predominantly as an additional measure of trade, but in part related to production and to shipments.

This index was described in the October, 1933 issue of the *Pittsburgh Business Review*.

WINDOWS OF WASHINGTON

WASHINGTON

GRAND DUKE NICHOLAS, at the time Russia's chief military figure, emerged from the World war with the doubtful honor of having conducted the greatest retreat in history.

It begins to look as if the steel industry will have to emulate the grand duke for the second time in a decade in moving back out of the reach of its self-appointed foe—the federal trade commission.

On July 23, 1924, the trade commission concluded the famous Pittsburgh basing point case by finding that "Pittsburgh plus is a price fixing scheme succeeding the old steel pools" and decreeing that "the use of any basing point other than f.o.b. mill or shipping point is illegal."

Though the basing point case was directed specifically against the United States Steel Corp., when the Corporation under the astute leadership of Judge Gary accepted the decision with good grace the rest of the industry followed suit. That was retreat No. 1.

Now, in this era when "the little fellow" is the paramount consideration of Washington and the new gage of NRA is not how much labor has been re-employed or how much payrolls have been expanded but is the buyer getting all the "breaks," the multiple basing point system itself is under fire.

Up to Friday, the report of the trade commission on the present steel basing system had not been disclosed, and some mystery surrounds it. General Johnson, head of NRA, admits having asked for a survey of how steel prices were working out, but the trade commission appears to have reported direct to the White House. This suggests the possibility of crossed wires between the general and the commission.

At any rate, the understanding in Washington is that the trade commission views the present steel basing point system as affording opportunity for price fixing and the oppression of the buyer, especially the small one. General Johnson said last week:

"I think the system is to be regarded with suspicion. I have not made up my mind that it is to be condemned. It has been condemned where there was no governmental sanction or supervision. The courts and the trade commission have held that it is inherently monopolistic—its background was price fixing and collusion without governmental supervision."

IF THE experience of the steel industry at Washington since March 4 is any criterion, its a safe bet that something like this is going to happen:

Directors of the American Iron and Steel institute will be summoned to Washington. With his characteristic hearty laugh and warm hand the President will greet them. He will tell them how fine the support of the steel industry to his program has been, but—

He is a little disturbed by the report of the trade commission on multiple bases. He appreciates, of course, that it is a highly technical problem, and the trade commission itself may not have the entire picture. Nevertheless, there seems to be a little room for doubt.

With the country apparently on the road to recovery, not even a suspicion should be permitted to stand in the way, and he is sure he can count on the steel industry to co-operate again, to lean over backward in removing any disturbing or doubtful element. And if the industry will confer with the trade commission and General Johnson and Mr. Richberg the matter can be cleared up.

So, the steel industry will confer and—still reading the future from the past—another important concession will be made. That will be retreat No. 2.

Supposing a concession is made, it apparently must be a withdrawal to mill bases entirely, especially on flat-rolled products.

On pig iron, for example, the steel code lists as basing points every furnace in the country. On such a finished product as bars, Youngstown appears to be the only large producing point that is not a base.

However, on sheets, and in lesser degree hot-rolled strip, many large producing points have not been set up as basing points, and this prompts some to wonder whether large sheet users have been active.

Present sheet bases are Pittsburgh, Gary, Birmingham and Pacific coast ports. Of course, differentials greatly favor Detroit and other Michigan consumers. But these sheet producing centers are not basing points: Sharon, Pa.; Kokomo, Ind.; Ecorse (Detroit), and Monroe, Mich.; Baltimore; Buffalo; Massillon, Youngstown, Middletown, Mansfield and Niles, O.; Newport, Ky.; Granite City, Ill.; and Parkersburg, W. Va.

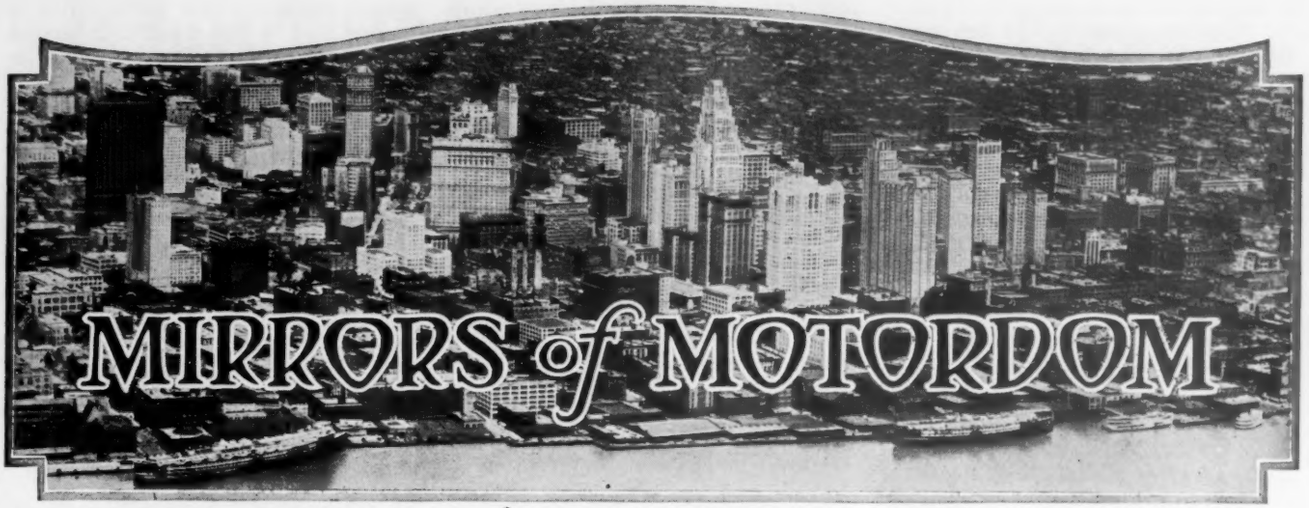
Aside from the omission of numerous sheet-producing cities as basing points, which might be explained away on account of the competition of strip steel and other trade conditions, the basing point matter appears to be another outgrowth of

(*Please turn to Page* 58)

More Govt. by Alphabet

Additional initialed government agencies, bringing up to date the list published in STEEL for Jan. 22, page 14, include:

CWS—Civil Works Service
DLB—Deposit Liquidation Board
FSHC—Federal Subsistence Homesteads Corp.
NBCIB—National Bituminous Coal Industrial Board
NPSAC—Nonmember Preferred Stock Advisory Committee
PWOA—Public Works of Art



GMC Seeking Steel Tieup?

• • •

Auto Orders Over 200,000

• • •

Lincoln Shifts Body Dies

DETROIT

GENERAL MOTORS, largest automotive buyer of pig iron and finished steel, has just been considering breaking away from a traditional policy and becoming a producer.

It is reliably reported negotiating with the Corrigan, McKinney Steel Co., of Cleveland, and its affiliated interest, the Newton Steel Co., of Monroe, Mich., on this basis:

For the next two years, General Motors would place with these two companies one-half of its requirements for products which they produce. This includes principally pig iron and steel bars from Corrigan-McKinney and sheets from Newton.

In return, General Motors would receive an option to purchase these two companies at the conclusion of the two-year period.

According to information from Cleveland, interests now in control of the two steel companies believe the price offered for them is too low, and for this reason the deal may not go through—at least on the present basis.

The implications of this new thinking by General Motors in regard to its supplies of pig iron and finished steel are important. Along with other automotive consumers, General Motors has been watchful of the trend in prices.

Recently, some important officials have been counseling steel sellers to proceed slowly in the matter of price, urging that steel is a tonnage industry, and that current prices might appear satisfactorily remunerative were steelmaking operations to get up to 60 per cent.

The suggestion of differentials to large automotive consumers has been advanced. One buyer holds to the theory that the automotive industry, to the exclusion of all other large outlets for steel, places steel actually in the hands of the ultimate consumer, and for this reason automobile manufacturers should be considered another finishing department and probably the largest steel seller.

Only Henry Ford, of all automobile manufacturers, now makes his own pig iron and some of his steel. Several years ago it was rumored that General Motors would build a blast furnace at Saginaw, adjacent to its large foundries there, but this never materialized. Late in 1932 General Motors purchased about 100,000 tons of pig iron from Corrigan-McKinney, which it moved by water to Saginaw last summer.

General Motors, through its Chevrolet, Buick, Olds, Cadillac, Fisher Body and other manufacturing units, has placed its business—the largest and most attractive in the industry—over a wide range of suppliers. Concentrating it in two hands would withdraw noteworthy tonnage from other producers. Even if the negotiations should fall through, as some believed last week, a salutary effect on steel prices might be one result.

Control of the Corrigan-McKinney company rests with the Cleveland-Cliffs Iron Co., of which W. G. Mather is chairman, through ownership of a majority of the common shares of the McKinney Steel Holding Co.

Senior to these common shares are 7250 $100 par preferred shares of the Holding company, on which the dividend has been passed. This preferred stock, 6 per cent cumulative, is callable at $105.

BY THE end of this week the more important shows, including that at Chicago, will be over and all that the automobile industry now has to do is to manufacture cars.

Believe it or not, there was a time when sales managers in Detroit were going around with their tongues hanging out for retail orders. But today—late January—finds no dearth of retail orders, and no lack of dealers' stock orders. For the time being, the problem is one of production, not sales.

With attendance and public interest at the January shows unprecedented, the automobile industry last week began to clear away the tinsel and snuff out the ballyhoo, finding underneath the debris actual orders for more than 200,000 units.

Chevrolet alone claims 85,000 orders on its books; Pontiac more than 20,000; Plymouth 40,000; Dodge enough for capacity operations through March; Hudson-Terraplane 12,000; Olds and Pontiac each 10,000.

These immediate unfilled orders, aggregating 200,000 or more, should be a round month's production. Though January production apparently has not exceeded 130,000 units, in excess of 200,000 each are assured for both February and March—provided, of course, production difficulties are whipped—making first quarter output 500,000 units.

Excluding only 1933, the interest displayed at the January shows has foreshadowed the year's volume. Each succeeding week this January the optimism exuded in Detroit has increased, and this in spite of the greatest mechanical difficulties encountered since the manufacture of automobiles assumed the proportions of an industry.

Considering the die and toolmakers' strike and the enormous number of changes involved in assembling the new front ends, the wonder in Detroit is not that there are so few new cars on the streets but that there are any at all.

FORD, meanwhile still is making hay. Daily assemblies at Fordson last week were slightly more than 3000, or at the rate of 15,000 week-

ly and 60,000 monthly. Ford's total for January probably will be some 40,000 units, with 70,000 in prospect for February. The Toronto assembly plant of the Ford Motor Co. of Canada, closed since Aug. 1, has been reopened.

On the other side of the hotly contested low-price field is Chevrolet. Last week daily assemblies at Flint averaged about 1500, or half the Ford rate. Two weeks ago only 1000 jobs daily were being turned out; last week the peak was 1600, and with Chevrolet convinced that it can sell as many cars as it can make in the first half year, full crews on a 24-hour day are pushing production up as rapidly as possible. For the first time in years, some departments have been working Sundays.

Staring Chevrolet in the face is insistent demand from dealers and the public who have bought some 85,000 cars from dealers, more on the strength of the printed word than display models. It will be the end of this week before all Chevrolet dealers have some cars and possibly a month before every dealer has the complete line of delivery.

Plymouth at present is far from realizing Walter P. Chrysler's hope for making it the leader in the low-price field, its present daily schedule being 450 to 500 units, compared with some 1500 Chevrolet and about 3000 for Ford.

Ford, as has previously been related, minimized model changes this year and is stressing immediate delivery.

Chevrolet's chief difficulty has been in making the single lengthwise weld on the two pressed metal parts that go to make the oil-tight housing for its coil springs. It already has made one change in design. Plymouth, with its spring unenclosed, has encountered difficulties making the spring itself.

Dodge output last week also was between 450 and 500 daily. The 38,000 assemblies which Dodge and Plymouth were shooting at in January will prove far short of the mark, despite the fact that sometime next month Chrysler expects its mounting employment to exceed its previous record of 48,000. Neither the streamlined DeSoto nor Chrysler has yet been put into production.

SO STRONG is the belief in Detroit, that business generally is coming back more rapidly than had been hoped for, that makers of medium and high-price cars are commencing to share the optimism of the low-price field.

For example, about Jan. 1 Lincoln ordered 500 assemblies and released 150. Early last week it released the remaining 350.

Only a few days elapsed until 500 additional were ordered and then immediately released. The body supplier, with over 42,000 Ford jobs on hand, was unable to grant any promises, so with the characteristic impetuosity of the industry, the Lincoln dies were "jerked" and 17 carloads shipped out of town to another body builder who promised immediate action.

Packard is up to 100 assemblies daily. Cadillac has the heaviest order backlog in several years.

Incidentally, the sharp reductions in LaSalle and Cadillac prices this year, and the reports of a small Buick in the spring indicate a revival of the General Motors policy of blanketing each price field with more than one car.

All the way up from Chevrolet six, to Olds six, to Pontiac eight, to Olds eight, to Buick eight, and then on to LaSalle and Cadillac the prospective buyer has two and sometimes three General Motors cars to pick from instead of having the option of one General Motors car or a Dodge, Graham, Hupp, DeSoto or some other make.

Graham, with unfilled orders for 1200 cars, is attempting to expand its schedule from 80 daily to 150. Buick, at 375 units daily, has scheduled 9500 units for February, 500 more than in January, Hudson-Terraplane is averaging 1000 cars weekly.

Progress Slow but Sure, Says Dalton

CONFIDENCE in the outlook for the steel industry was expressed by H. G. Dalton, chairman of the board, Youngstown Sheet & Tube Co., and senior partner of Pickands, Mather & Co., at a dinner Jan. 25 at the Youngstown club for Youngstown Sheet & Tube Co. sales representatives from all over the country, in Youngstown for a sales conference.

"There is today definite proof of industrial recovery," Mr. Dalton said. "Naturally, progress must be slow, and we cannot expect too much. Nevertheless, I believe there is no question but that the steel industry and general business will have a materially better year in 1934 than was the case in 1933."

The chief subject of discussion at the meeting was the steel code.

"In co-operation with the desires of the administration and the purposes of NRA," said Frank Purnell, president of the company, "the steel industry has greatly increased wages, decreased hours, and added to the number of employes upon its payroll. This was done in the face of declining operations, and only slight advances in prices.

"In order to maintain employment and wages on this basis it is absolutely necessary that the industry be assured of a net operating income sufficient to carry these wage increases.

"This must be accomplished through strict adherence to the terms of the steel code with respect to competitive practices, which were formulated in accordance with the desires and provisions of the administration.

"Consumers benefit from the steel code because they are free of the possibility of secret lower prices given competitors. The industry benefits because by this method it achieves the price stabilization necessary to support the heavily added wage burden."

Castings Progress Topic at Cleveland Meeting, Jan. 31

Three foundry metallurgists, leaders in their respective branches of the industry, will discuss recent developments in properties and applications of ferrous castings at a joint meeting on castings development in Cleveland, Jan. 31. The meeting, arranged for both engineers and foundrymen, is sponsored by the American Foundrymen's association, the Cleveland Engineering society and the Cleveland section of the American Society of Mechanical Engineers, and will be held in the ball room of Hotel Statler at 8 p.m.

The program will include Harry A. Schwartz, manager of research, National Malleable & Steel Castings Co., Cleveland, who will speak on malleable iron castings; Maj. R. A. Bull, foundry consultant and former director of the Electric Steel Founders' Research group, Chicago, who will discuss steel castings; and Fred J. Walls, metallurgist, Eaton-Erb Foundry Co., Vassar, Mich., who will talk on gray cast iron. Dan M. Avey, editor of *The Foundry*, Cleveland, and vice president of the American Foundrymen's association, will preside.

Urges Crossing Elimination

American Institute of Steel Construction, New York, has issued a special report on highway crossings, showing the necessity for maintaining this work and the possibilities it embodies in putting federal funds to work. Deferred construction requirements amounting to $13,266,000,000 include $1,000,000,000 for express highways and $2,400,000,000 for grade crossing elimination.

Wins Contract for Springs

American Spiral Spring & Mfg. Co., Pittsburgh, is supplying 140 bronze springs for construction of lock No. 5 on the Mississippi river near Minneiska, Minn.

Industrial Men in the Day's News

Colorado Fuel & Iron Products Co. Appoints Three New Sales Officials

F. STANLEY JONES has been named sales manager of wire products for the sales organization of the Colorado Fuel & Iron Co., Denver. He joined the company as errand boy in 1908 and has spent the greater portion of the intervening years in the sales department.

W. H. MESSNER has been made sales manager of rolled products. He left the Midvale Steel & Ordnance Co. in 1918 to go with the Colorado company. His entire period of service has been connected with the sale of steel, and in 1925 he was appointed assistant sales manager.

GEORGE TRITCH has been appointed assistant manager of sales for the steel division. A grandson of George Tritch, early pioneer of Denver who for so many years conducted the Tritch Hardware Co., he has been associated with the Colorado Fuel & Iron Co. since 1918.

JOHN S. DAVEY has been made special representative in the sales department of Russell, Burdsall & Ward Bolt & Nut Co., Port Chester, N. Y., handling engineering problems.

Charles E. S. Place has been named special representative in the sales department, developing and merchandising the recently acquired American Marsden locknuts.

Dave Prosser, formerly with Lamson & Sessions Co., Cleveland, now represents the Russell, Burdsall & Ward company in the southwest Texas district, with headquarters at the Southland hotel, Dallas, Tex.

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Harry D. Fenske, manager of the transportation and export department, Great Lakes Steel Corp., Ecorse (Detroit), Mich., was appointed secretary of the Port of Detroit Authority at its initial meeting, held in Detroit, Jan. 17, his services having been loaned to the Port Authority to devote such time as may be necessary toward developing the initial program for this body.

George R. Fink, president of the National Steel Corp. and its Detroit unit, the Great Lakes Steel Corp., has been named one of five port commissioners chosen by the governor of Michigan, constituting the Port Authority.

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C. S. Stilwell, sales manager of the Warner & Swasey Co., Cleveland, has been elected to the board of directors. He has been with the company since 1912.

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James W. Early, sales manager of J. S. McCormick Co., Pittsburgh, has been appointed vice president of the company, at the same time continuing as sales manager.

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Harry T. Gilbert, Chicago district sales manager of the Illinois Steel Co., will represent the Carnegie Steel Co. in the Chicago district, with offices at 208 South La Salle street, effective at once.

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John J. Brown has been elected president of the Foster-Wheeler Corp., New York, succeeding L. B. Nutting whose death was noted in STEEL for Jan. 22. Mr. Brown is also chairman of the board of the company, a position held since 1927.

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J. B. Durkee has been appointed manager of the Houston, Tex., office of the A. M. Byers Co., Pittsburgh. He formerly represented the company in the Houston territory and more recently has been stationed in Tulsa, Okla. He succeeds H. B. Weathersby who died Dec. 19.

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Arthur R. Petterson has been elected vice president of the Thomson-Judd Wire Machinery Co., Lynn, Mass., succeeding the late Josiah Judd. The company is a subsidiary of the Thomson-Gibb Electric Welding Co. Other officers are: George A. Cutter, president; D. J. Lyne, secretary; W. T. Ober, assistant secretary; and A. P. Reed, treasurer.

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William C. Hayes, formerly vice president and general manager of the J. K. Larkin Co. Inc. and subsequently manager of the iron and steel department of American Export Co., has been placed in charge of

the iron and steel department of Otto Kafka Inc., New York.

George W. Hoffmann, formerly export manager of the Stockham Pipe & Fittings Co. and organizer of the Cooperative Export Organization on various iron and steel products manufactured in Birmingham, Ala., now has charge of exports of the Kafka organization.

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J. H. Hubb has been appointed purchasing agent for the United Gas Improvement Corp., Philadelphia.

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Carl Sieweke has joined the staff of the Campbell-Hausfeld Co., Harrison, O., where he will be identified with engineering and production work on melting equipment.

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Forrest U. Webster, for seven years advertising manager of Cutler-Hammer Inc., Milwaukee, has been named manager of merchandising sales and will continue to supervise advertising.

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Frank Weiler, vice president of James J. Weiler & Sons Inc., Huntington, W. Va., has been elected president to fill the office held by the late James J. Weiler, founder of the company. Charles T. Weiler has been chosen vice president.

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A. T. Perkins, Chicago, was re-elected president of the Webster Mfg. Co., Tiffin, O., at the annual meeting. E. P. McPherson and Charles S. Clarke, both of Chicago, were re-elected vice president and secretary-treasurer, respectively.

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Carl O. Anderson, formerly with Leeds & Northrup Co., Philadelphia, and more recently with the Claud S. Gordon Co., Chicago, recently has been elected vice president and appointed general manager of the Pyrometer Service & Supply Co., Cleveland, subsidiary of the Gordon company.

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Joseph P. Baldez, direct salesman for Cincinnati Milling Machine Co. and Cincinnati Grinders Inc., has been transferred from the Cincinnati territory to the Chicago office of the company, 2400 West Madison street. His new territory will include the northern half of Chicago, the north central section of Illinois and southeastern part of Iowa.

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Fred D. Shaw, Walker & Pratt Mfg. Co., Watertown, Mass., was elected president of the New England Foundrymen's association at the thirty-eighth annual meeting of the group in Boston, Jan. 10.

Other new officers are: George W. Thornburg, Crescent Park Brass Foundry, Waltham, Mass., vice president; Arthur Gibby, Gibby Foundry Co., East Boston, treasurer, and Fred F. Stockwell, Barbour-Stockwell Co., Cambridge, Mass., secretary.

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F. M. McCarthy, of Columbus, O., has been named by the Ironton Fire Brick Co., Ironton, O., as the company's foundry representative in Ohio. An experienced foundry operator, he will be available for consultation on all problems connected with cupola refractories.

C. E. Bales, vice president of the Ironton company, has been reappointed chairman of the finance committee of the Ironton city council. He also was recently elected to membership in the Academy of Political Science of Columbia university.

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R. E. Murphy has been appointed sales manager of the I-T-E Circuit Breaker Co., Philadelphia. He formerly represented the Esterline-Angus Co. in Pittsburgh, and prior to that was sales manager of the latter company in Indianapolis.

Harry J. Fisher has been named Cleveland district representative of the company with headquarters at

(*Please turn to Page* 58)

Died:

CHARLES J. SNOW, 66, treasurer, Bruce-Macbeth Engine Co., Cleveland, in that city, Jan. 22. His early associations included the Globe Iron Co. and Cleveland Shipbuilding Co., the latter subsequently becoming the American Shipbuilding Co. In 1901 he was active in formation of the Macbeth Iron Co., which ultimately became the Bruce-Macbeth Engine Co., builder of heavy vertical natural gas engines.

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Robert Bernard Tillman, 26, metallurgist, Industrial Steel Casting Co., Toledo, O., in that city, Jan. 24.

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Frank W. Kennedy, 58, vice president and general manager, DeLaval Steam Turbine Co., at his home in Yardley, Pa., Jan. 24, following a long illness.

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Whitten Duncan, 68, vice president of the Phillips & Buttorff Mfg. Co., Nashville, Tenn., builder of stoves and furnaces, in Pittsburgh, Jan. 16, while enroute to New York.

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Gordon Brochner, 51, formerly vice president, National Transit Pump & Machine Co., Oil City, Pa., and at one time identified with the Koppers Co., Pittsburgh, in Oil City, Pa., recently.

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Theodore Worcester, 74, attorney, at his home in Aurora, Ill., Jan. 23. He assisted in preparing the legal setup which preceded the organization of the United States Steel Corp.

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Walter L. Geyer, 52, chief clerk of the Bethlehem Steel Co. plant at Lackawanna, N. Y., in Buffalo, Jan. 20. He became chief clerk in 1926 and continued in that capacity until a recent illness.

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Frank C. Cunningham, 60, formerly general superintendent of the Brown-Bonnell works of the Republic Iron & Steel Co., in Youngstown, O., Jan. 18. He was with the Republic company for 34 years, retiring in 1930.

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John Patrick Bourke, 49, vice president in charge of sales of the Ewald Iron Co., Louisville, Ky., pioneer wrought iron manufacturer, in New York, Jan. 17. He was in charge of the New York office of the company.

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William Torrance, 76, pioneer foundry operator of LaCrosse, Wis., in Milwaukee, Jan. 21. He joined his father in 1877 in establishing John Torrance & Son, producer of gray iron castings, and was one of the organizers of the LaCrosse Bridge & Steel Co., fabricator.

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James S. Farlinger, 53, president and one of the founders of the Farlinger-Rice Co., East Orange, N. J., sheet metal products manufacturer, in Verona, N. J., Jan. 18. At one time he was an official of the Briscoe Mfg. Co., Newark, N. J., also a manufacturer of sheet metal products.

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Charles F. Lang, 62, former president of the Lakewood Engineering Co., Lakewood, O., at his home there, Jan. 24. Becoming associated with the Lakewood company in 1906, he retired several years ago when the company was consolidated with the Jaeger Machine Co., of Columbus and Cleveland.

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Martin J. Henehan, 77, retired steel manufacturer, in Seattle, Jan. 16. A native of Ireland, he entered the steel business years ago with the Mark Hanna interests in Cleveland. Moving to the Pacific coast, he was associated with William Pigott and W. D. Hofius, pioneer steel manufacturers, and later established the Seattle Frog & Switch Co.

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Charles Benjamin Bright McLaren, the Baron Aberconway, 83, widely known in steel, shipbuilding and colliery activities in Great Britain, in London Jan. 23. Chairman of the Tredegar Iron & Coal Co., John Brown & Co. and the Sheepbridge Coal & Iron Co., he was also the author of *Our Basic Industries: Coal, Iron, Steel, Machinery, Shipbuilding.*

Present Steel Gains Point To European Renaissance

FROM an ecomonic standpoint 1933 ended in Europe under much more satisfactory conditions than for several years past, and prospects of a further gradual revival in 1934 are fairly good. Unfortunately, European political conditions are still in confusion, and experience has shown that unsettled major political problems, especially of an international character, react unfavorably on business.

It is apparent, however, that trade at present has to some extent divorced itself from extraneous factors, and it can, therefore, be hoped that the new year will see political entanglements straightened out concurrently with a slow, but sure return to a new state of prosperity.

Reports from steel-producing nations and statistics of world production, published in the Jan. 1 issue of STEEL, have already shown the improvement that has set in in the iron and steel and heavy industries. It is true that, generally speaking, this improvement has been limited to domestic business, and that international exchanges are still impeded by exchange fluctuations and various restrictions.

See Stabilized Currencies

Both these factors, however, are themselves effects of the big trade depression, and one can anticipate with a certain degree of confidence that when the leading countries have succeeded in putting their own houses in order, a return to stable currencies and the removal of many drastic restrictions will stimulate international exchanges anew.

In Great Britain, the outlook for 1934 is decidedly hopeful and it is generally reported that Christmas trade, which is a fairly reliable barometer of public feeling and confidence, has been better than for many years. Another sign of confidence is the facility with which recent important issues have been taken up in the investment market.

Tax returns show a considerable increase over a year ago, and the substantial reduction in unemployment has brought about an increase in the country's buying power and a reduction of social charges supported by the state.

Increased activity of production is shown by the fact that the output of steel during the first eleven months of 1933 was 6,333,900 tons, compared with 4,826,400 tons in the corresponding period of 1932, an increase of 31.3 per cent.

During the eleven-month period, imports of iron and steel dropped from 1,519,495 tons in 1932 to 880,856 tons in 1933, a reduction of 42 per cent; on the other hand, exports increased very slightly, from 1,724,679 tons to 1,750,399 tons. This indicates that most of the increased production was used at home, showing larger consumption on the part of the consuming industries.

HOPE, based on improved conditions already discernible, forms the basis of the accompanying survey of business in steel industry in Great Britain and the Continent for the last quarter of 1933. *Obstacles remain to be overcome but the trend is distinctly upward in practically every country. The survey is by Vincent Delport, European representative of* STEEL.

This is confirmed by reports from all over the country; and even during the period of calm which sets in at Christmas time, several works received substantial contracts, and there was no need to extend the holiday period. Even the shipbuilding industry has shown greater activity of late, to the benefit of Scotland, Northern Ireland and the north-east coast of England. In this respect the practical certainty of resumption of work on the giant Cunarder has given a fillip to and renewed the hopes of shipbuilding firms.

Discreet progress was made throughout the past year in the establishment of the plan for reorganizing the steel industry of Great Britain. There are however, considerable difficulties to be overcome in practical application of the scheme.

An example is given by the unsuccessful attempt made to amalgamate the Dorman Long and South Durham concerns. In such cases large and conflicting interests are bound to be opposed on occasion, and it is, therefore, probable that considerable time will elapse before the ambitious scheme of general organization that has been mapped out can materialize. Taking the industry as a whole, however, it is in a much more healthy position than it was 12 months ago, thanks to the larger amount of business passing and to the better prices already obtainable.

On the Continent the situation is generally less favorable than in Great Britain. The French budget has been passed with considerable difficulty. Certain taxes have been increased or reimposed, and to relieve the treasury, substantial loans will have to be taken up by French citizens. Neither factor is an incentive to industrial or trade development.

On the other hand, business has suffered for a long time, owing to the uncertainty of the country's financial position, so it can now be hoped that, the necessary sacrifices having been accepted, more normal activities will be resumed. Another disappointment for steel and kindred industries is that under the present regime of enforced economies, less money will be available for railroad purchases and public works. On the other hand, a certain amount of activity has recently been due to the hastening of defensive preparations.

France Absorbs Production

Notwithstanding the fluctuating character of business in France, the output of steel has increased materially, and in view of the fact that both imports and exports have barely exceeded the previous year's figures, this increase of production has been mostly absorbed to meet the country's own requirements.

Belgium and Luxemburg have suffered more in comparison, because they depend mainly on export trade, and exports of iron and steel from Belgo-Luxemburg union were no higher than in 1932.

In Germany and Italy the position improved materially, owing to efforts by the respective governments to assist domestic trade and industry. In both cases there has been a substantial increase in production figures and a reduction of unemployment.

In both countries also the government exerts a rigid control on industry, and in Italy a change is expected in the country's constitution, which will bring industry under the direct supervision of the state. It will be

(*Please turn to Page* 61)

EUROPEAN STEEL PRODUCTION

Gross Tons, 000 omitted

First Eleven Months

	1933	1932	Per cent increase 1933 over 1932
Germany	6,745	5,168	30.5
Great Britain	6,334	4,826	31.1
France	5,931	5,013	18.2
Belgium	2,494	2,520	(—) 1.0
Luxemburg..	1,671	1,757	(—) 4.9
Italy	1,616	1,247	29.5
Saar	1,520	1,308	16.2
	26,311	21,839	20.05

EDITORIAL

Character and Integrity In Merchandising

IT IS more than a coincidence that the officers of industrial companies are stressing the importance of better merchandising. The marked trend of thought to this phase of business management is the natural outcome of recent developments which are serving to shift the selling of industrial products from the category of pawnshop dickering to the dignity of open and aboveboard negotiation.

In the iron, steel and metalworking industries the two chief factors responsible for this change are, first, the long-time trend away from old established markets for material and equipment, and, second, the open-price provisions of NRA codes, which serve to minimize price and to accentuate quality and service.

In the prewar days, when the railroads were the outstanding purchasers of ferrous materials and important buyers of equipment, machine tools and supplies, the approved pattern of merchandising was comparatively simple. Today, a much smaller proportion of the output of material, equipment and supplies goes to the type of consumer exemplified by railroads, car and locomotive builders, agricultural implement makers, etc., and a greater portion of the whole goes to consuming groups such as automobile builders, and manufacturers of containers, refrigerators and other household equipment, machine parts, and miscellaneous items. In other words, distribution today is more diversified; in general, goods are purchased in smaller lots and to more exacting specifications.

Industrial Executives Recognize Victory of Quality Over Price in Future Selling

This shift in consumption has been going on during the past decade, but it has been most noticeable during the depression years. Its significance was heightened in 1933, when the advent of the second factor—NRA codes—removed many of the destructive elements of cutthroat competition and introduced merit ahead of price as a weapon for sales.

It was this combination of circumstances that has prompted industrial leaders to speak more positively of the need of improved merchandising. Early this month Walter S. Tower, executive secretary of the American Iron and Steel institute, issued a statement in which he made the following reference to merchandising:

> "For the first time in many years the art of true salesmanship is becoming a factor in selling steel. During recent years, steel has been sold in too many cases on secret concessions in price, credit or terms. Now that these unfair competitive weapons are eliminated, the emphasis in selling has been placed where it should be, namely, on quality, service to consumer, delivery convenience and similar points. . ."

Eugene G. Grace, president of Bethlehem Steel Corp., in *Scribner's Magazine* for February, expresses his conviction that industry is moving toward higher standards in selling. He declared that the following considerations will play a large part in future merchandising:

1. The character of the company.
2. Integrity in every policy.
3. Close relationship between salesman and customer.
4. Service by the producer in the way of metallurgical, engineering or other specialized knowledge.
5. Sales co-operation with the distributor.
6. Reciprocity.
7. Undeviating quality of the goods as represented.

In placing strong emphasis upon the qualities of character and integrity, Mr. Grace touches the foundation stones of successful business management and of merchandising.

End of Closed-Door Dealing Marks Signal Achievement in Merchandising of Steel

As long as industry was operating under policies which permitted secret dealings with preferred customers, it was constantly exposed to suspicion on the part of consumers, government and the public. No matter how honest the motive or how just and fair the deal between seller and buyer, the mere fact that the transaction was not open to the light of day gave rise to misunderstanding and distrust.

Industrial concerns which have built up reputations for sterling character and sound integrity under the unfavorable conditions of the past should be able to reap proportionately greater rewards under the open-dealing policies of today.

The present system encourages buyer and seller to place all cards on the table to a greater extent than heretofore. Principals with honest motives have nothing to fear under this arrangement. Insofar as the trend of steel consumption and the influence of NRA have forced selling out into the open, they have contributed more to improved merchandising than any development in the history of the industry. Producers and consumers should unite in holding this important gain, and in protecting it against those who for selfish reasons would go back to the old practice of secrecy and its attendant evils.

THE INDUSTRIAL DIAL

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The Business Trend Section of STEEL
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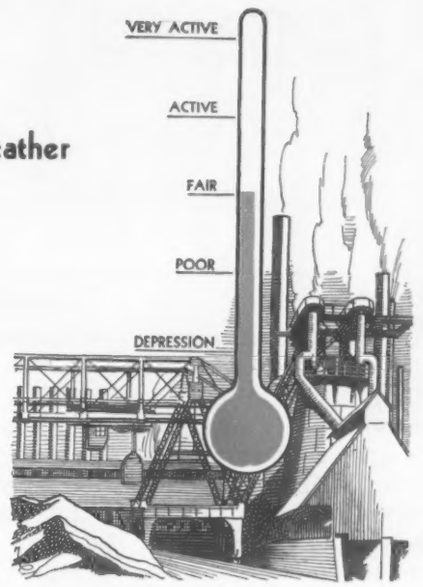
APPROACH of the end of the first month of 1934 finds business poised for what seems to be a plunge into a new phase of the recovery movement. The statistical record for December, now virtually complete, shows that in the majority of lines of industrial activity the downward trend from last July had been reversed before the end of the year. The weekly barometers indicate that improvement has continued since Jan. 1, although here and there the gains have not been up to expectations.

Among the final reports for December were a number of special significance. For instance, the improvement in building and engineering construction was 27 per cent over November. Noticeable among the contributing factors was a sharp gain in factory construction, which with improvement earlier in the year brought the total for 1933 to twice that of 1932. This upward trend in industrial building has been indicated in the weekly reports in STEEL of awards for structural steel and concrete bars. In recent months awards for industrial buildings have been more numerous than in any period for several years. Construction for chemical plants, breweries and distilleries, and food products establishments has been most noticeable.

Another favorable indicator was the index of machine tool orders, which in December rose to 126.2 from 82.8 in November. The December figure is the highest recorded since June, 1930.

Industrial Weather



TREND:

Upward

Last March the index stood at 13.4, the lowest point on record. Since then it has risen steadily, except for a minor relapse in September. The index of foundry equipment orders also showed improvement in the final month, rising to 43.8 from 36.6 in November.

Turning to the record for January, as revealed by weekly statistics, we find comfortable progress. Electric power output is running from 9 to 10 per cent ahead of that of comparable weeks

The Barometer of Business

Industrial Indicators

	Dec., 1933	Nov., 1933	Dec., 1932
Pig iron output (Daily average, tons)	38,456	36,124	17,650
Machine Tool Index	126.2	82.8	31.7
Finished steel shipments (tons)	600,639	430,358	227,576
Ingot output (Daily average, tons)	72,786	59,264	33,117
Dodge Bldg., awards in 37 states (sq. ft.)	11,451,500	11,762,300	6,948,700
Automobile output	*75,000	66,195	109,542
Coal output, tons	29,600,000	30,582,000	31,522,000
Business failures; number	1,132	1,237	2,469
Business failures; liabilities	$27,200,432	$25,353,376	$64,188,643
Cement production, Bbls.	.....	4,672,000	4,248,000
Cotton consumption, bales	348,000	475,368	440,100
Car loadings (weekly average)	513,090	591,524	497,366

*Estimated.

Foreign Trade

	Dec., 1933	Nov., 1933	Dec., 1932
Exports	.....	$184,000,000	$131,614,000
Imports	.....	$128,000,000	$97,087,000
Gold exports	.....	$2,957,000	$13,000
Gold imports	.....	$1,894,000	$100,872

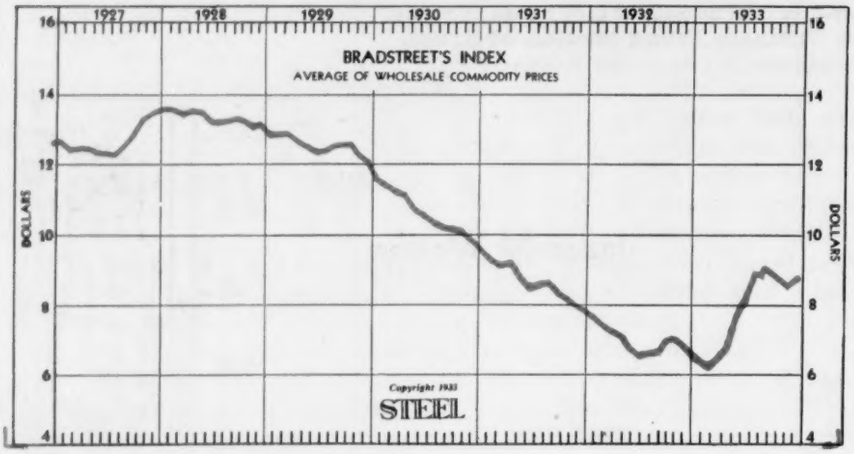
Financial Indicators

	Dec., 1933	Nov., 1933	Dec., 1932
25 Industrial stocks	$137.01	$133.45	$89.54
25 Rail stocks	$33.04	$29.19	$20.58
40 Bonds	$71.96	$68.91	$64.05
Bank clearings (000 omitted)	$16,439,217	$18,061,693	$20,738,986
Commercial paper rate N. Y., per cent	1½	1½	1½
*Commercial loans (000 omitted)	$8,402,000	$8,508,000	$10,297,000
Federal Reserve ratio, per cent	63.9	65.1	63.0
**Railroad earnings	$37,565,822	$57,264,780	$33,396,305
Stock sales, N. Y. stock exchange	34,877,616	33,645,736	23,208,129
Bond sales, par value	$279,255,500	$313,120,350	$249,204,450

*Leading member banks Federal Reserve System.
**November, October and November, respectively.

Commodity Prices

	Dec., 1933	Nov., 1933	Dec., 1932	Monthly Av., 1913
STEEL's composite average of 14 iron and steel prices	$32.42	$31.59	$28.92	$26.32
Bradstreet's index	$8.83	$8.81	$6.79	$9.21
Wheat, cash (bushel)	$1.02	$1.05	63c	92c
Corn, cash (bushel)	63c	61c	41c	51c
Petroleum, crude (Bbl.)	98c	98c	67c	$2.50



	1934	1933
January 1	$8.83	$6.79
	1933	**1932**
December 1	$8.81	$6.88
November 1	8.84	6.96

in 1933. For the week ending Jan. 20, output was slightly off from the preceding week, but 9.5 per cent above that of the third week in 1933. Car loadings were expected to be about 555,600 cars, or on a par with the previous week, or about 12 per cent over the week of Jan. 21, 1933.

Automobile companies report sales far ahead of anything in five years. Delays in production have created a large backlog of unfilled orders, and concurrently this delay has retarded the expected steady rise in steelworks operations. Also a lull in PWA activity has set back certain projects, so that in the fourth week of January there is just a slight hint of a temporary hesitation in industrial activity.

Where Business Stands

Monthly Average, 1932—100

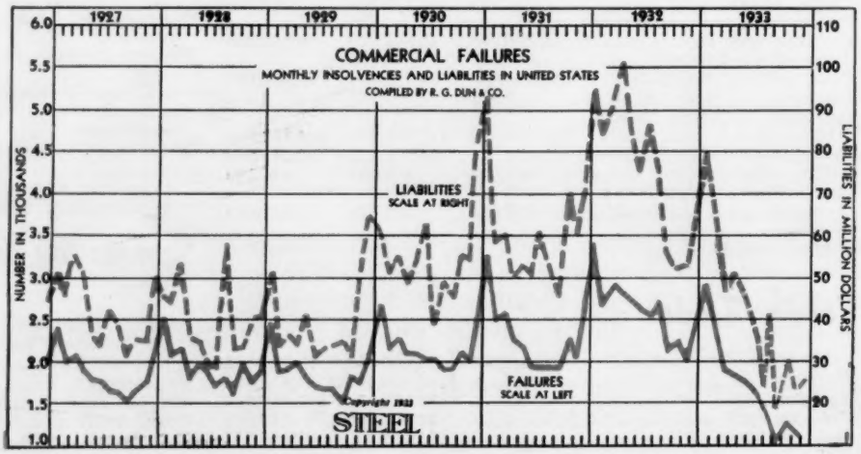
	Dec., 1933	Nov., 1933	Dec., 1932
Steel Ingot Output	173.4	141.2	78.9
Pig Iron Output	162.3	154.5	74.4
Freight Movement	94.5	108.9	91.6
Building Construction	84.6	90.5	53.4
Automobile Output	62.8	50.2	91.8
Wholesale Prices	124.4	124.0	95.7

Commodity Price Index Advances 39 Per Cent From Low Point of 1933

Bradstreet's index of wholesale commodity prices registered its first increase in three months and on Jan. 1, 1934 stood at $8.83, as compared with $8.81 for Dec. 1, 1933 and $6.79 on Jan. 1, 1933. The slight increase of 0.2 per cent over the preceding month followed a decline of 0.4 per cent on Dec. 1. Comparing the current index with the 1933 low point of $6.35 registered on March 1, however, reveals a gain of 39 per cent.

Record of Commercial Failures in 1933 Lowest in Over Ten Years

Commercial failures, reported by Dun & Bradstreet, Inc., numbered 1132 in December, 1933 compared with 1237 in November and 2469 in December, 1932. Liabilities were $27,200,432 as against $25,353,376 in the previous month. With a total of 20,307 business defaults in the United States, the insolvency record for the year just closed was an exceptionally favorable one and to find a lower record it is necessary to go back to 1923 when only 18,718 failures were reported.



Number

December, 1933	1,132
November, 1933	1,237
December, 1932	2,469

Liabilities

December, 1933	$27,200,432
November, 1933	25,353,376
December, 1932	64,188,643

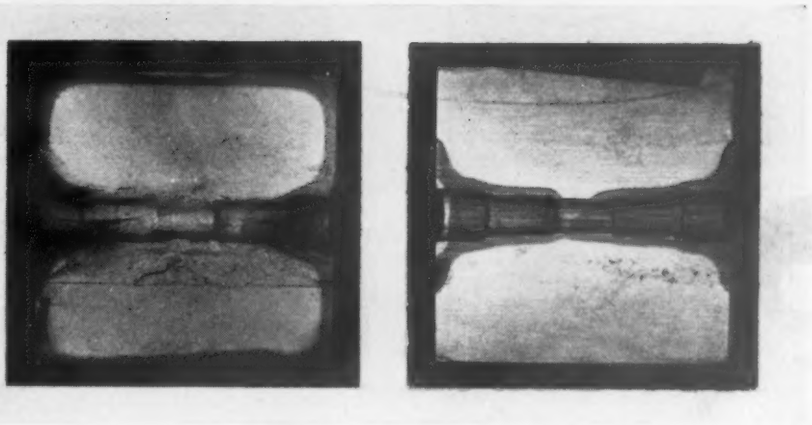


FIG. 1 (Left)—Macrograph of solid cold heading die tong quenched in still water. Dies so quenched showed erratic behavior. Fig. 2 (Right)—Macrograph of die quenched by forcing water through it at 100 pounds pressure. Die life still proved erratic

COLD HEADING . . . .

Trend Toward Higher Strength Materials Introduces Numerous New Tool and Die Problems—Quenching Practice Improved

BY CARL L. HARVEY
Metallurgist, Lamson & Sessions Co.

WITH few exceptions, the raw material for cold-headed parts is hot-rolled rod made by the basic open-hearth process. The analysis of this rod depends entirely upon the type of bolt made and the purpose for which it is intended. While it is true that a large percentage of headed parts are made of S. A. E. 1010 and S. A. E. 1020 material, there is a rapidly growing demand for higher carbon and alloy material. This trend toward materials of higher strength has introduced many new tool and die problems.

Most of the material for cold heading is reduced from rod to wire in a single drawing operation; the percentage reduction varies in different mills but, in general, is between 10 and 30 per cent. Until recently, chilled iron dies were used almost exclusively for wire drawing, but in spite of their high hardness, these dies wore rapidly and it was not uncommon to find variations in diameter of 0.002 to 0.003 inch in a single coil. These size variations, of course, caused considerable trouble in subsequent operations.

Use of sintered carbide drawing dies has eliminated this trouble entirely and it is now possible to draw several hundred tons of wire through a single die before it wears oversize. Adoption of carbide drawing dies also has made it practical to produce drier finishes of the lime stearate type and bright wet drawn wire in the heavier sizes.

In connection with the use of carbide dies, two points should be watched, namely shape of the die and care of the die. When the carbide dies were first introduced, they were made according to diamond die practice. The junc-

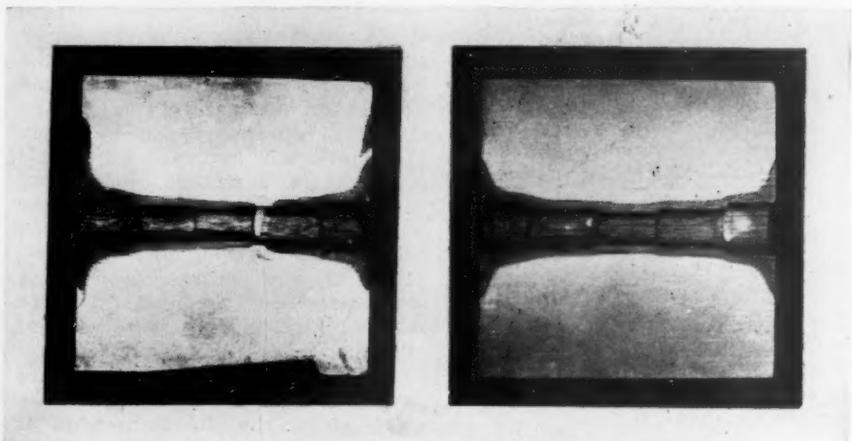


FIG 3 (Left)—Macrograph of solid cold heading die quenched by forcing water through it at 50 pounds pressure. Noticeable increase in life was obtained. Fig. 4 (Right)—This die was quenched at 20 pounds pressure and gave a deep uniform case. Good life was obtained

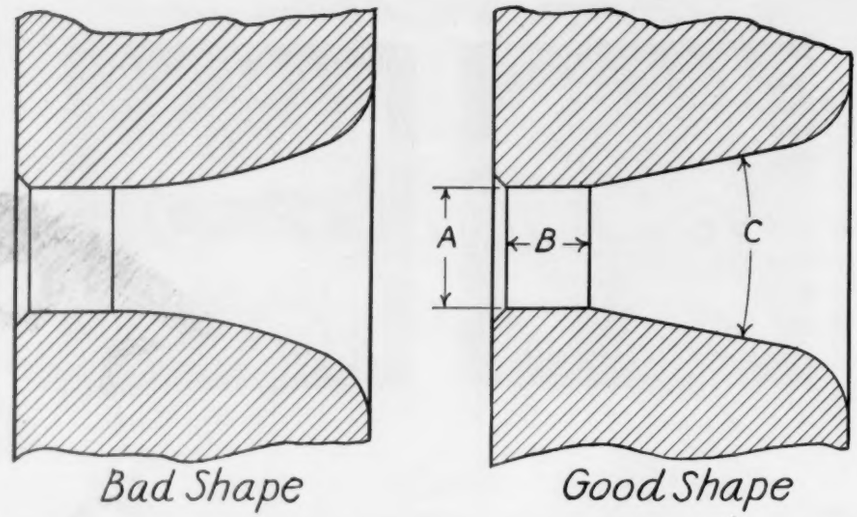


Fig. 5—Shape of sintered carbide dies is an important consideration in wire drawing. Bad shape is illustrated in the sketch at the left; good shape at the rght. In the latter, A *represents wire size;* B, *the length of bearing, equal to approximately three-fourths of* A; *and* C *is the entrance angle of* 20-22 *degrees*

tion line between the throat and the bearing was broken to such an extent that there was no line of demarcation between the two. For our particular type of wire drawing, we have found that the throat of the die should be truly conical in shape and the junction line between the throat and the bearing should be broken only to a very slight extent. At the present time, the writer is unable to say just what throat angle and bearing length give best results, but a 20 to 22 degree included angle with a bearing length of 60 to 70 per cent gives good results. Sketches of bad and good shapes are shown in Fig. 5.

Carbide dies are expensive and should be treated as high-grade tools. If polished at regular intervals so that the luster is maintained in the throat of the die, better wire will be produced and die life will be increased greatly. If the dies are allowed to rough up in the throat, small particles of carbide will be picked up by the wire and the bearing soon will become scored.

Problems Are Examined

Turning now to the operation of cold heading, the cycle is completed in a second or a fraction of a second. The largest machines make from 40 to 50 blanks per minute, while the smaller machines make from 200 to 250 blanks per minute.

Let us consider some of the problems encountered in the heading operation which, as a rule, are in connection with the solid die machines and can be traced to improper set-up, defective wire or bad tools. The matter of proper set-up is of great importance, particularly as regards tool life. The modern cold header is a complicated piece of machinery with a multitude of adjustments. If these adjustments are not properly made or are not made in proper sequence, the tools may be strained so badly that they will fail in a very short time.

Under the defective wire classification we have: 1. Poor or improper coating; 2. hard material; and 3. surface defects. Wire used for solid die heading must be free from all fire scale and rust and in addition must be coated with some kind of a lubricant which will prevent metal to metal contact between wire and die during the upsetting operation. Otherwise die life is short and it is difficult or even impossible to eject the finished blank from the die. The kind of coating depends upon the type of the blank and the process by which it is made, namely the upsetting or the extrusion method.

In the upset process, the diameter of the wire used is slightly less than the diameter of die impression. The wire, when upset, swells laterally and fills the impression and for this type of work, a lime-soap or a lime-stearate wire gives excelent results. The color of the wire is a light gray, which is not objectionable for most purposes. Where a bright finished bolt is desired, the finish may be removed by wet or dry tumbling for a short time.

In the extruding process, the wire diameter is greater than the smallest impression in the die. The wire is driven into the die in the first part of the upsetting cycle and actually is reduced in cross sectional area. For this type of work, a uniform coating is required which possesses high load carrying ability; a sulcoated grease or soap drawn wire is satisfactory. If the blank has square shoulders which must be filled out and the extrusion is light, somewhat better results may be obtained by use of a stearate drawn wire.

Trouble caused by hard wire frequently is encountered in the heading operation. Wire which has been too heavily reduced in the wire drawing operation or in the case of the higher carbon materials has not been properly normalized, is difficult to upset. Considerably higher heading pressures than normal are required to fill the die impression and as a result die life is greatly reduced. The majority of heading stocks run under 190 brinell, although much harder stocks can be headed successfully.

Surface Flaws Spoil Appearance

Surface defects are one of the header man's worst enemies. In the upsetting operation, the surface of the material is put in tension radially, and any seams, scratches or other surface flaws are greatly exaggerated. While many of these defects do not reduce the strength of the part appreciably, they are unsightly and as many cold headed parts are used on exteriors where appearance is important, this phase of raw material inspection is important.

A simple, but in most cases effective, test for this type of defect is the twist test. A short length of wire or rod is twisted approximately 270 degrees in a length of 2 to 3 inches and then twisted back to its original position. If seams or laps are present, they usually will open up after this test.

Tools for open die headers give little trouble. The die impression is made in the soundest portion of the steel and it is a comparatively simple matter to heat treat these dies so that the die impression is deeply and uniformly hardened. For this type of die, a straight carbon tool steel, containing from 1.0 to 1.1 per cent carbon, is satisfactory. Such dies should be slowly heated to 1500-1550 degrees Fahr., quenched in cold water or brine and drawn to show a Rockwell hardness of C58-59.

Solid dies, on the other hand, are a constant source of trouble. In the first place, the die impression is made in that part of the bar which

THE accompanying article describing modern cold heading practice emphasizes the necessity for producing dies and tools which will give satisfactory life under most severe service. Considerable information on the choice of die steels and the heat treatment of various types of dies is presented. The article constitutes the major portion of a paper presented recently before the Cleveland chapter of the American Society for Metals. Carl L. Harvey, the author, is metallurgist, Lamson & Sessions Co., Kent, O.

has received the least amount of work, and which contains the greatest amount of impurities. In the second place, it is very difficult to obtain a deep uniformly hardened case throughout the die impression.

For solid die work it is absolutely necessary that the center of the steel be sound and well worked, furthermore, it is necessary that the steel be of the deep hardening type. Dies made of shallow hardening steel soon fail, due to "sinking" of the hardened case. This case must be of sufficient depth to withstand the constant hammering and the terrific pressures involved. Even dies made of deep hardening steel, properly treated, usually fail by fatigue. Small cracks eventually develop at the most highly stressed points and the dies fail.

Qualities Are Enumerated

Therefore, a solid-header die must have the following characteristics: 1. It must have sufficient depth of case throughout the die impression to resist the heading pressure; 2. the surface of the impression must be of sufficient hardness to give reasonable life as regards wear; and 3. the die as a whole must possess sufficient toughness to prevent splitting.

The steel most commonly used for this type of die is a straight carbon grade containing about 1 per cent of carbon and 0.20 to 0.30 per cent manganese. It is our practice, and probably general practice of bolt makers, to harden this grade of steel from temperatures of 1525-1550 degrees Fahr. and to draw back to a Rockwell hardness of C 58-60.

Some metallurgists believe that the excellent results obtained by quenching from this high temperature are due to the coarse grain structure obtained. It is the author's opinion that this coarse structure is not desirable and the results obtained are not because of, but rather in spite of the structure. He believes that the increased rate of cooling attained when quenching from the higher temperatures is the real reason for increased die life.

While straight carbon steels give satisfactory results for solid-header dies, it is likely that the low-alloy content steels have not been given proper attention. Several investigators have reported that even small percentages of alloying elements, particularly chromium, are injurious. It is true that steels containing small amounts of chromium (0.1-0.2 per cent) or with higher manganese content than normal (0.40-0.50 per cent) are apt to split in service if given standard treatment, but these same steels when given proper attention will out-perform the straight carbon steels. Dies of this type should be quenched only through the hole and should be supported adequately in the die block so that the tendency to split is reduced to a minimum. In some cases it is even advisable to press the dies into an auxiliary block or holder made of a heat-treated alloy steel, such as S. A. E. 3145.

Proper Quenching Is Key

Next in importance to the grade of steel used is the matter of quenching the dies. The author's experience leads him to believe that more trouble is caused by improper quenching than by any other phase of hardening. Our earliest quenching practice was to hand quench solid dies in a tank of still water or brine. Agitation was provided by swinging the die from side to side or up and down. Dies quenched in this manner proved to be erratic in their behavior. Most of the dies expanded, a few split and relatively few gave fair life. By cutting these dies with a flexible wheel and etching in acid, the reason became apparent—as illustrated in Fig. 1, the majority had a heavy case on their external surfaces but little or no case in the impression. The few dies which gave a fair life had a shallow case throughout the impression.

The next development was to immerse the die in the coolant and at the same time to force a stream of the coolant through the die. Many dies quenched in this manner split when put in the header. Cutting and etching showed a very deep case both inside and outside, as a result, such a large portion of the cross section was hardened that the dies lacked the necessary toughness. By raising the drawing temperature, splitting was eliminated, but the case was too soft to wear well.

Many Changes Made in Quench

The next step was to quench the die in a fixture, forcing the cooling medium through the die and over only a small portion of each face. Water pressure in the neighborhood of 100 pounds per square inch was used so that a considerable volume of water was passing through the die per minute. Dies quenched in this manner did not split, but die life was erratic. Macro-study of representative dies, an example of which is shown in Fig. 2, showed lack of uniformity in the depth of case.

Various methods of correcting this were tried; backing up buttons or "spreaders" on the discharge side of the die were tried with only fair success; a spiral nozzle on the inlet side was used, but with little gain. Finally a study of the effect of pressure was made. It was found that by dropping the pressure to 50 pounds a noticeable increase in die life was obtained. A further reduction in pressure to 25 pounds gave still better results. Macrographs of dies quenched at 50 and 20-pound pressures are shown in Figs. 3 and 4 respectively. Today, all solid dies are quenched at these comparatively low pressures; for some dies, as little as 10 pounds is used. Velocity through the die is low and the coolant has a chance to follow the contour of the impression. This gives a deep uniform case which

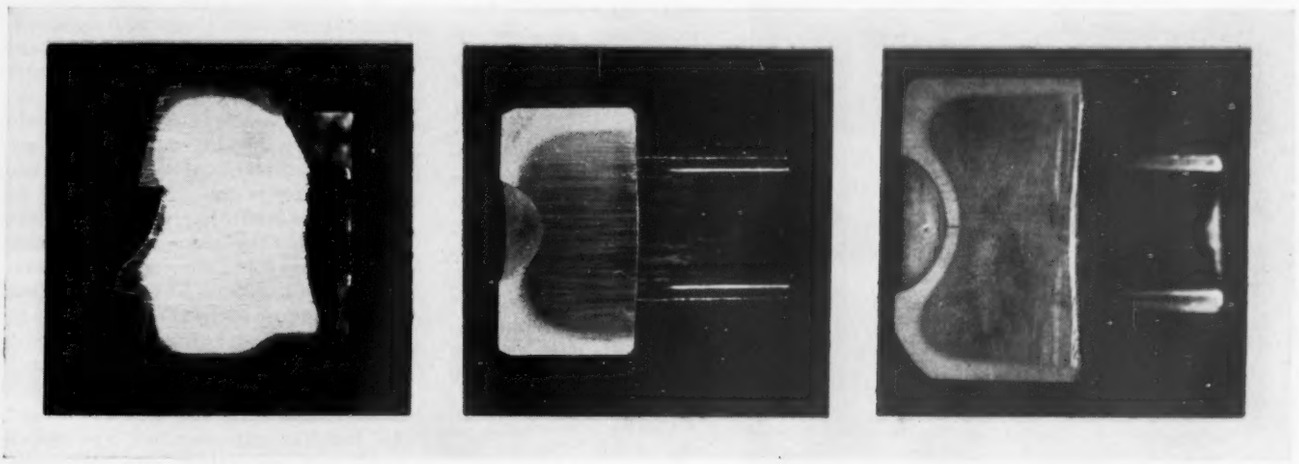


Fig. 6 (Left) is a macrograph of an improperly quenched special head hammer. Fig. 7 (Center) is an improperly quenched button-head hammer. Fig. 8 (Right) shows a properly quenched button-head hammer

is precisely the type of case needed.

The same troubles, but to a lesser extent, are found in quenching hammers. The tendency to form steam pockets on the bottom of the hammer impressions is great and means must be taken to eliminate them if satisfactory life is to be obtained. Where the impression is shallow, it usually is sufficient to quench the hammers horizontally and move them in an arc. If the impression is deep, however, it is better to flow a gentle stream of coolant into the impression. This sweeps away the steam bubbles and gives the steel a chance to cool rapidly and uniformly. Macrographs of improperly quenched hammers are shown in Figs. 6 and 7, while a properly quenched hammer is shown in Fig. 8.

Special Steel for Trimming Die

The next operation of importance is that of trimming. Here excess metal is removed from the upset by pushing the blank through a die of the desired shape and size. The difficulty is to obtain a die which will remain sharp, will not chip or flake on the cutting edge, and will not pick up. We have found that high-speed steel of the standard 18-4-1 type or the high-carbon high-chrome steels are most satisfactory for this purpose. High-speed steel hardened at 2250 degrees Fahr. and drawn to Rockwell C 60 will give excellent results. The recent decrease in base price of the high-carbon high-chrome steels will give impetus to their use and there is every reason to believe that they will prove satisfactory if drawn to the same hardness.

The final mechanical operation on the blank is that of threading. This may be done by the cut thread or the rolled thread process.

In the treatment of thread rolling dies the hardener again experiences difficulty. At the present time several different types of steel are in use for threader dies: 1. Straight carbon, water-hardening steel; 1. Low-alloy, oil-hardening steel; 3. High-carbon, high-chrome oil or air-hardening steel; and 4. High-speed steel.

Definite Results Sought

Whatever type of steel is used the following results must be obtained if a satisfactory bolt is to be produced:

First—Local distortion of the dies must be very slight. Thread tolerances particularly as regards pitch diameter must be held within extremely close limits. If each die warps in the hardening operation only 0.001 inch across its face, two-thirds of the working tolerance of the die is used up and a thread is produced which does not have a uniform fit or feel in the gage. If, on the other hand, the die changes uniformally in shape, correction for this may be made in the machining operation.

Second—The die steel must have sufficient surface hardness to resist wear and sufficient toughness to prevent chipping and roughening on the top of the thread. To obtain these characteristics in a single die is most difficult.

The proper heat treatment of roil threader dies is probably the most difficult job of the hardener. These dies are rectangular pieces of steel of considerable size, the faces of which are covered with fine grooves and ridges. Accuracy of these grooves and ridges must be maintained.

The size of the die and the fact that little distortion is permissible implies a long, slow heating period. This, in turn, necessitates close control of the furnace atmosphere. Excess air leads to scaling, with the result that the thin edges of the die are lost and the die made worthless. A carbon-rich atmosphere, on the other hand, rapidly carburizes the thin edges of the die and these chip off quickly when put in service. A strictly neutral atmosphere is the condition to be desired but one which is difficult to obtain or maintain.

In the past, a number of makeshifts, so to speak, have been used. Dies of a straight-carbon, or low-alloy type, have been coated with some kind of a glass producing chemical, such as borax or boracic acid. These have proved satisfactory from the standpoint of surface obtained, but they are difficult to remove from the fine serrations, particularly after an oil quenching operation.

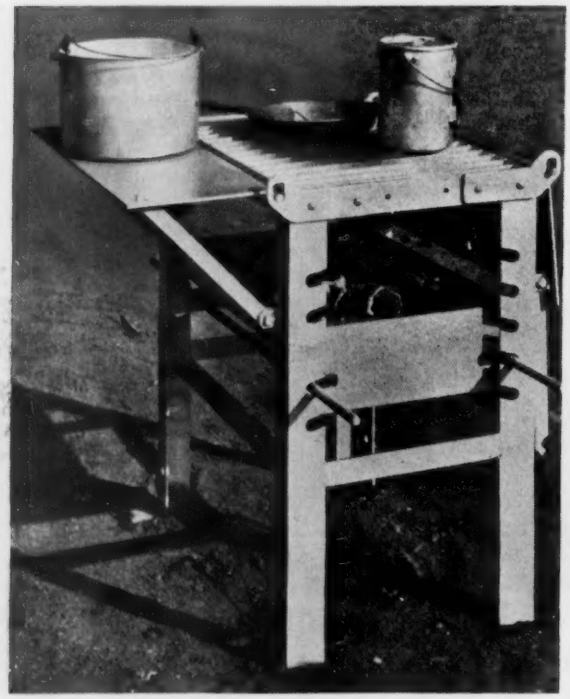
Use Gas Coke for Packing

Treatment of the high-carbon, high-chrome type, and high-speed types, is even more difficult because of the higher temperatures involved. At these temperatures the glasses previously mentioned have not proved satisfactory and a carbonaceous packing material must be resorted to. To date, the most satisfactory results have been obtained when using gas coke which, previous to its use, has been heated for some time at a temperature equal to or slightly higher than the hardening temperature used. With this material as a packing medium quite satisfactory results have been derived but the time and temperature cycles must be watched carefully, otherwise carburizing of the edges will result.

Recent development of high-temperature electric furnaces equipped with atmospheric control has placed a new tool in the hands of the heat-treater and it is to be hoped that such equipment will solve some of the problems encountered in treating thread-rolling dies.

In conclusion, the author wishes to point out that there still is a tremendous amount of development work to be done on better steels and treatments for the cold-heading industry. Low-alloy tool steels probably will be developed which will replace the straight-carbon steels in use for so many years. There should be a field for nitriding. It is possible to develop thin cases on high-speed and high-carbon chrome steels having a core hardness of C 55-56. Wear resistance of such steels should be tremendous and hardness of the core should eliminate danger of sinking.

Even the sintered carbides should have a place in the heading plant. As tougher compositions are developed and mountings are improved, this opens up a tremendous field to the metallurgist.



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ARC welded structural steel was used in the construction of this camping stove. Designed for Boy Scouts and sportsmen, the stove was required to meet the specifications of both lightness and durability. It is entirely arc welded except where the parts must be movable. A feature of the equipment is the simplicity of the method by which the firepan can be raised and lowered. The stove is a product of the Burger Iron Co., Akron, O., with welding equipment supplied by the Lincoln Electric Co., Cleveland

◆

The Plastic Forming Of Metals

By PROFESSOR DR.-ING ERICH SIEBEL
Translated by JOHN H. HITCHCOCK

Part II—Forces and Flow of Material in Technical Forming Processes

5. Forming by Means of Drawing (Continued)

SIMILAR results are reached if the deformation efficiency in drawing is calculated as the quotient of the average tensile strength existing before and after the draw and the experimentally-determined deformation resistance, and is represented as a function of the die angle (Figs. 75 and 76). The most favorable shape of die corresponds here to a maximum value of the deformation efficiency. Because the deformation strength of the material has been chosen as the parameter in this method of representation, it is probable that the relations thus obtained are also valid, with close approximation, for materials having strength characteristics differing from those of the materials tested. Such a transfer, in view of the varying relations of lubrication, is apparently not possible without restriction.

Results Are Plotted

Drawing tests therefore were carried out with wires of harder steel (B) and of copper. The test results for soft and hard steel wires, using suitably-shaped dies with angles varying from 6 to 12 degrees, and with lime-rape-oil lubrication, can be represented graphically, as in Fig. 77, in relation to the deformation and the reduction of area. The increase of the deformation efficiency with increasing reduction of area is shown clearly. The curve of deformation efficiency rises higher for the working of harder steel wires than for the soft material.

In addition to the shape of die and the reduction of area, the lubrication relations influence the efficiency of deformation and the requirement of force for drawing. Particularly, the

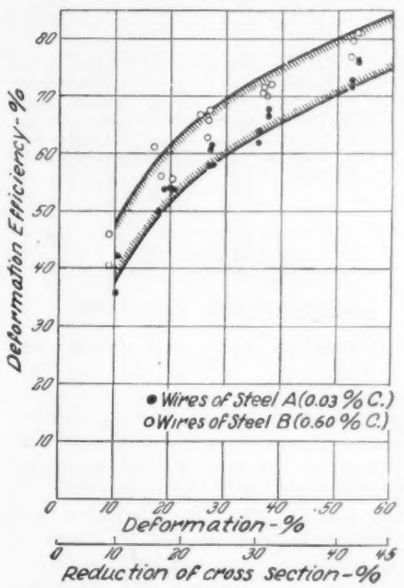
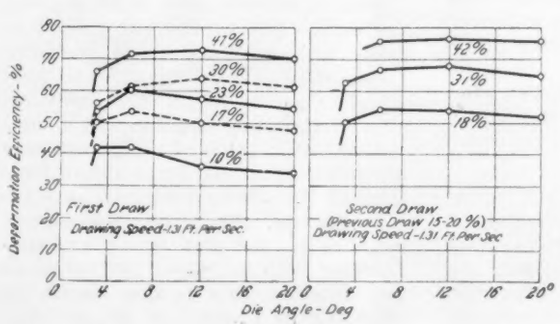


Fig. 77—Deformation efficiency in the drawing of steel wires on draw-bench, with lime-rape-oil lubrication

cleanness of the outer surface of the wire depends largely on the lubricant

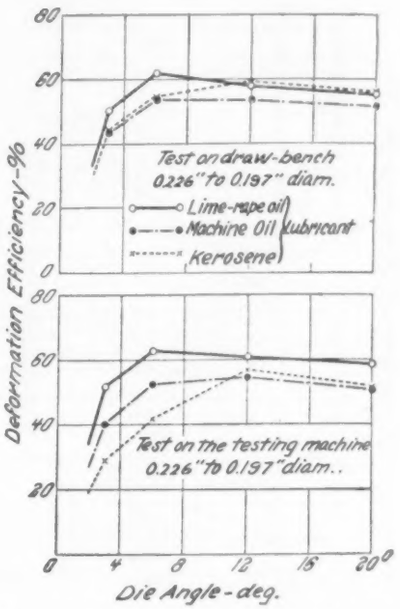


Figs. 75 and 76—Influence of die angle and reduction of cross section on deformation efficiency in drawing of mild steel wires

used. With poor lubrication, the deformation efficiency naturally becomes reduced, and the force requirement is increased. As Figs. 78 and 79 show, the greatest differences are found in slow drawing. Moreover, with poor lubrication, the maximum values of deformation efficiency are displaced to greater die angles. This is explained, as previously observed, by the fact that an increase of the die angle produces a decrease of the external forming losses.

How Material Is Altered

The heating of the drawn material during drawing can be calculated according to equation (21). In severe draws it reaches considerable values, and increases in low-carbon steel

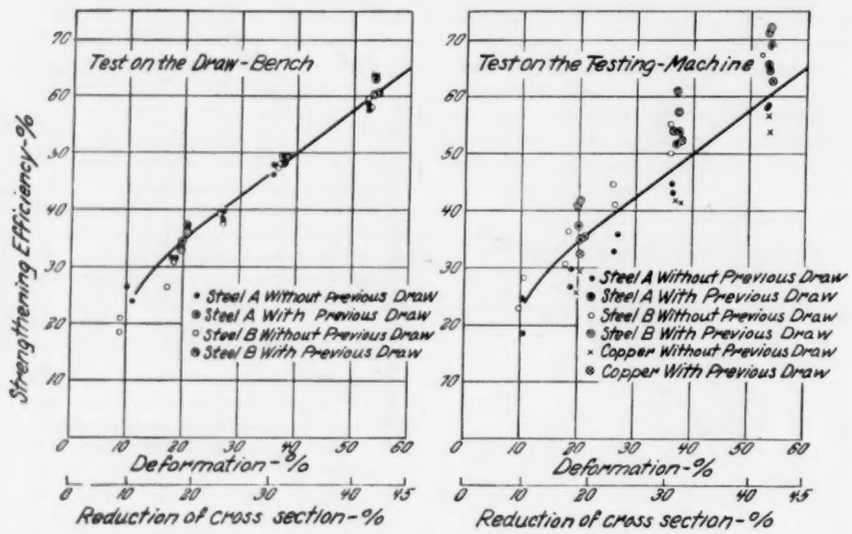


Figs. 78 and 79—Influence of lubricant on deformation efficiency in drawing of mild steel wires

wires up to 180 degrees Fahr. in harder steel wires even up to 360 degrees Fahr. No opinion is offered regarding the extent to which such heating alters the deformation resistance of the drawn material. The behavior of the lubricant, in any case, is fundamentally influenced by the heating. The viscosity of most oils drops, even at temperatures under 212 degrees Fahr., to a fraction of the value which exists at room temperature. In this connection, it is probably important that the temperature of the outer surface of the wire is still higher than the average temperature of the wire, because of the effect of friction, and that the temperature in the die is increased from the entrance side up to the delivery side, corresponding to the increasing deformation. For this reason, the lubricant during the drawing process is comparatively viscous at the entrance to the die. The viscosity then

decreases to a great extent only in the die itself.

In the tests previously described, by the use of lime-rape-oil lubrication, it was possible to produce deformations of more than 50 per cent in the first draw on all materials tested, corresponding to reductions of cross-sectional area exceeding 40 per cent, without causing the wire to break. On the other hand, after a previous draw with 15 to 20 per cent reduction of area, the harder steel wires broke during a draw from 0.26 to 0.197-inch diameter, if a die with an angle of inclination of 3 degrees was used, although with copper wires this draw was made without difficulty. Even with severe reduction of area, the average longitudinal stress was still far below the strength of the wire in question, as indicated by a tensile test. Even in a draw from 0.276 to 0.197-inch diameter, the average longitudinal stress was still below this value. In spite of this fact, this reduction of area was obtained with none of the materials investigated. The reason for the premature failure of the wire, even with reductions smaller than those corresponding to an equality of the drawing force and the breaking force in a tensile test, must be sought in the non-uniformity of the stress distribution over the delivered cross section, and in the difficulties arising during the drawing-in of the wire.



Figs. 80 and 81—Efficiency of strengthening in drawing of steel and copper wires

Clarified by Calculation

These relations can be examined most distinctly if the stress ratio in the delivered wire is calculated as the quotient of the average longitudinal stress and the strength after the draw. In Figs. 80 and 81, the values given for the draws on the drawbench and in the testing machine, with 6 and 12-degree dies and with lime-rape-oil lubrication, are shown for mild steel and copper wires in relation to the deformation and to the reduction of area. Although the values of the stress ratio determined for steel wires in all tests on the drawbench, both with and without a previous draw and with both 6 and 12-degree dies, lie close to a smooth curve with only slight scattering; the individual values for drawing in the testing machine, where the speed of drawing was much lower, lie far apart from one another.

Show Minimum Stress

Moreover, the copper wires drawn without a previous draw, within the investigated range of reduction of area, show distinctly the least stress ratios. In all materials investigated, the stress ratio in the subesquent draws increases considerably in comparison to the first draws. Inasmuch as the drawing-in of wires into the die always must be calculated with stress relations similar to those determined on the testing machine, it is clear that for soft, not previously drawn materials, greater reductions of area are permissible than for harder or previously drawn materials. Because of the nonuniform stress distribution over the delivered cross-section, and because of the inevitable inaccuracies in pointing the wires, the possible stress ratio probably does not exceed 75 per cent. In practice, the reduction of area in drawing operations rarely is increased above 40 per cent in a single draw, in order to prevent overdrawing the wire; that is, the occurrence of internal fractures.

Upon the basis of the previously described drawing tests, a series of conclusions is provided for the practical execution of wire drawing. It is a requirement of economy that the desired final cross section be reached in the fewest possible drawing operations and in the shortest possible time; and the forming, however natural, must be so directed that injuries to the material, especially through overdrawing, be avoided with certainty. The fulfillment of this requirement is facilitated considerably by the fact that the deformation efficiency increases with increasing reduction, and that it practically is unaffected by an increase of the drawing speed.

The reduction is limited by the fact that the longitudinal stresses in the delivered wire must always remain smaller than the tensile strength of the material, considering the flow hardening which results from the deformation, and considering the nonuniform stress distribution which exists at the die exit. The greatest reduction of area, which can be reached, was determined as 45 to 50 per cent. The upper limit of the economical speed of drawing small sections probably is set only by the construction of the drawbench or of the wire-drawing machine (smooth starting), and by operating practice; whereas a lowering of the deformation efficiency, and therewith, of the permissible reduction is not to be expected with an increase of the drawing speed even up to many times the test velocity.

Requires Slow Drawing Speed

With many of the large sections and hard materials, as shown by experience, only a slow speed of drawing can be chosen if injury to the material is to be avoided. This may be attributed to several circumstances. With greater drawing speed, in this case, the nonuniform heating of the drawn material which accompanies the nonuniform deformation cannot be equalized, so that high heating stresses occur. Above all, the possibility of a gradual equalization of stress at the die exit fails; a disadvantage which can be very much reduced only in smaller cross sections.

The shape of die is of greater importance for the achievement of more favorable relations; that is, a high deformation efficiency and minimized stress in the delivered wire. For this purpose the angle of inclination of the die should be so selected that it corresponds to the optimum, established in the tests, of 6 to 12 degrees for steel. Moreover, effort should be made to keep the internal forming losses at the die exit as small as possible, to assure as uniform distribution of stress as possible and a consequent high value of the permissible stress ratio, as well as complete freedom of the drawn material from internal stress. Thus, it is common in practice to use dies which are constructed with increased inclination at the entering side and as small inclination as possible at the delivery

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side. The latter offers the additional advantage of producing wire of uniform thickness even after wear of the die has begun; and of fulfilling the requirement of the wire for a sufficient length of contact, even with small drafts, so that reduction of the internal forming losses is permitted.

Lubrication, as is shown by the tests last described, has a more considerable effect upon the magnitude of the efficiency of deformation which can be achieved. Poor lubrication, moreover probably has an adverse effect upon the distribution of stress at the die exit and consequently upon the permissible stress ratio. Poor lubrication, naturally, must have an unfavorable influence upon the durability of the die. The observed effect of the drawing speed on the effectiveness of lubrication merits particular regard. With smaller drawing speed, it is accordingly necessary to devote greater attention to the oiliness of the lubricant than with higher speed, if thoroughly effective lubrication is to be assured.

Finally an important factor with regard to the reductions which can be achieved is the capacity of a material to equalize nonuniform stresses easily. At the beginning of a drawing process that is, as long as the material is not yet flow hardened, its capacity for deformation is greatest.

Affords Heaviest Reductions

In the first draw, therefore, the greatest reductions are permissible. Reductions of area exceeding 40 per cent could be obtained in this case with all materials investigated. In the subsequent draws, the reductions are made smaller, corresponding to the decreasing capacity for deformation of the drawn material.

The force requirement for cold drawing seamless tubes was investigated in detail by A. Pomp and W. Albert[68]. In this case also, the drawing speed is shown to have no appreciable influence upon the drawing force produced. The deformation efficiency for various drawing processes is shown in Fig. 82, in relation to the reduction per draw. Notwithstanding the fact that steels of entirely different strength were investigated in tube drawing, and entirely without regard whether the first or a later draw be considered, practically all test points for each type of drawing lie in a narrow limited region. With small reductions of cross section, approximately equal efficiency of deformation was found in all tube-drawing processes. With increasing reduction, however, the deformation efficiency of the sinking process increases more swiftly than that of drawing over a mandrel. If the efficiency given for the tube-drawing

[68] A. Pomp and W. Albert: Uber den Kraftbedarf beim Rohrziehen; Mitt. K. W. Inst. Eisenforsch. 9(1927)p. 95.

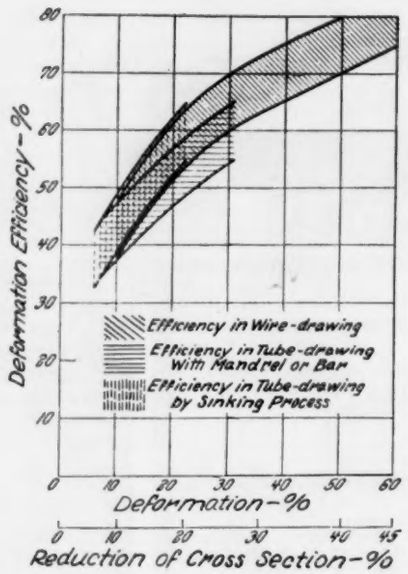

Deformation Efficiency - %
Efficiency in Wire-drawing
Efficiency in Tube-drawing With Mandrel or Bar
Efficiency in Tube-drawing by Sinking Process
Deformation - %
Reduction of Cross Section - %

Fig. 82—Comparison of deformation efficiency in wire and tube drawing

processes is compared with the corresponding values for wire drawing, which are also shown in Fig. 82, an agreement is observed which is close beyond expectation, and which is attributed to the similarity of the relations of deformation in these processes.

(To be continued)

Block Test Demonstrates Wood Screw Treatment

Elco Tool & Screw Corp., Rockford, Ill., recently perfected and announced (STEEL, Nov. 27, 1933, page 30) a process for treating wood screws to improve driving properties. The treatment, obtained by chemical means, is designated as "speedizing."

To demonstrate to users of wood screws the advantages of the treated product, the company has now prepared for distribution a block test. This consists of a drilled hardwood block and two packets of screws, one set treated and the other set untreated. These screws are to be driven into the block either by hand or power for comparison.

Requests for the block test should be addressed to the company's offices in Rockford, Ill.

Pinless Clothesline Made of Steel Wire Rustproofed by Galvanizing

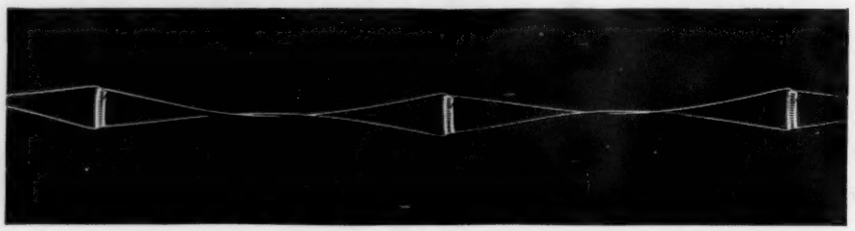
STEEL has invaded the clothesline and clothespin market in the form of a pinless line introduced by the Price Mfg. Co., Chicago. This article, shown in the accompanying illustration, is simple in design and offers several advantages in use compared with the conventional line and pin.

The pinless clothesline is made of 14-gage galvanized steel spring wire. The wire is received by the manufacturer in 200-pound coils which are straightened and cut to 41-inch lengths. Each of these lengths then is formed into a link, 1-foot long, 25 links comprising a standard length line. The design is such, however, that as many additional links as desired may be added easily.

In forming the links, the middle section of the wire is coiled by means of a special machine and the ends then are bent at opposite right angles. The hooks thus produced in the bending operation are used to join the link with the coiled section of the adjoining link, the two wires being given one twist to provide the spring action necessary to hold the ends secure. This same spring action serves to hold clothes to the line. Articles merely are inserted between the two wires where they are held firmly, since their weight tends to increase the tension of the wires. Their removal is accomplished quickly by sliding them out of the retaining wires.

Being galvanized, the line is resistant to corrosion and is long lived. When taken down it may be folded more easily than the usual rope. In its folded form, the line is cleaned quickly by placing it under running hot water.

The 25-foot section line weighs 2 pounds and the rapidity with which this article is meeting favor indicates that its manufacture will account for the consumption of several hundred tons of steel wire annually.



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If you are looking for a way to improve the quality of your product or to reduce its cost without depreciating its serviceability, give a little thought to the idea of using Republic Electric Weld Pipe for those parts requiring tubular sections.

Many manufacturers have found it profitable to use Republic Electric Weld Pipe instead of castings, forgings and machined parts—have shown real production savings in the elimination of patterns and dies and in the reduction of machining costs.

Briefly, these are the qualities that make this new pipe adaptable to mechanical applications: a weld as strong as the wall at any other point—uniform inside and outside diameters—uniform wall thickness—perfect concentricity—uniform grain structure of the metal—freedom from scale, giving a clean, smooth surface both inside and out.

Look over the various parts of the devices you manufacture with a view to fitting these qualities into your parts requirements. Outline your specific applications and let us make recommendations.

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German To English; New Technical Dictionary Helps

Deutsch-Englisches Fachworterbuch der Metallurgie, by Henry Freeman; fabrikoid, 327 pages, 5 x 7 inches; published by Otto Spamer, Leipsig, Germany; supplied by STEEL, Cleveland; in Europe by Penton Publishing Co. Ltd., Caxton House, Westminster, London.

A technical dictionary from German to English, covering iron and steel and the nonferrous metallurgy, this is Part I, with a second part presumably intended to translate English into German. It is up to the minute and will afford great assistance to those reading German technical articles containing newly-coined words and phrases in the steel and metals field.

◆

Second Volume of Textbook On Roll Design Devised

Roll Pass Design, Vol. II, second edition, by W. Trinks; cloth, 246 pages, 6 x 9 inches, 21 tables, seven charts, 176 illustrations; published by Penton Publishing Co.; supplied by STEEL, Cleveland, for $4.50, plus 15 cents postage; in Europe by Penton Publishing Co. Ltd., Caxton House, Westminster, London.

In 1930, the author, who is a leading authority on the theory of roll design in the United States, issued two books on roll pass design, primarily for the use of his classes at Carnegie Institute of Technology, Pittsburgh. The text constituted a revision and enlargement of articles and classroom lectures presented by Prof. Trinks in 1929 and 1930. The second edition of Vol. I, published recently, was reviewed in STEEL.

The second edition of Vol. II introduces many noteworthy refinements of the original text. The material has been revised, rearranged and amplified to take into account the advanced stage of present knowledge.

Chap. I deals with the contour and number of blooming mill passes for 2 and 3-high mills, and detailed data covering the design and use of gothic and diamond passes for billets as well as rolls for finishing squares.

In Chap. II, the author cites four types of rolls designed for making flat sections and by example shows the advantage of using stepped rolls. He discusses the production of sheet and tin bars by tongue and groove rolling and by means of pass layouts explains the details involved in the procedure.

The many ramifications involved in rolling merchant bars are presented in Chap. III. The gothic, leader, oval and finishing passes and the computation of their contours are set forth and examples are offered to clarify the author's statements. Problems concerning the shape of roll grooves and the arrangement of passes on the rolls in connection with the production of small merchant mill sections, percentage of reduction, slippage and spreading also are analyzed.

Chap. IV is given over to the discussion of special and separate features which characterize the rolling of angles, Z-bars, channels, I-beams, rails and other shapes. In explaining the various methods of rolling these sections, the author gives a few typical passes for each.

Die rolling including deformed, periodic and geared rolling is covered in Chap. V. The procedure for computing power requirements of rolling mills is considered from many standpoints in Chap. VI.

Appended to the previously mentioned chapters is a treatise dealing with the rolling of nonferrous metals into merchant shapes and seamless tubes. A pocket on the inside of the back cover contains seven charts mentioned in the text.

Prof. Trinks in this volume has pointed out skillfully the underlying reasons for the contour and size of roll passes. By marshaling comparisons of various rolling procedure, he has given the rolling mill industry a treatise dealing with the application of rolling principles rather than a compilation of passes.

◆

Metallurgy for Tyro, Expert; Practice Rather than Theory

Principles of Metallurgy, by Donald M. Liddell and Gilbert E. Doan; cloth, 626 pages, 6 x 9 inches; published by McGraw-Hill Book Co. Inc., New York; supplied by STEEL, Cleveland, for $5.50, plus 15 cents for postage; in Europe by Penton Publishing Co. Ltd., Caxton House, Westminster, London.

Two functions were aimed at in preparation of this work—to give to engineering students who do not purpose to take up metallurgy as a life work a general view of the subject and to give students intending to become metallurgists a proper foundation for their vocation. The attempt has been made also to fix the thought that metallurgy is not a rigid science but is an art based on economics and that profit rather than perfection is the aim.

It is also designed for use by the metallurgist in industry or traveling in the wilds, or the consultant in his office. In the section on physical metallurgy an endeavor has been made to explain the basic nature of metals and their properties in general rather than to describe certain metals and alloys found in most common use. It is deemed more important in a world where change is the continuous order of the day to develop a way of thinking about metals, a philosophy of metals, than information of temporary interest, about individual metals and alloys.

The book is in three parts, the first dealing with materials consumed in metallurgy, the second with extractive processes and apparatus and the third with physical metallurgy.

◆

Structural Design Problems Simplified by Handbook

Manual of Structural Design, by Jack Singleton; fabrikoid, 196 pages, 7 x 10 inches; published by H. M. Ives & Sons, Topeka, Kans.; supplied by STEEL, Cleveland, for $4.50, plus 15 cents for postage; in Europe by Penton Publishing Co. Ltd., Caxton House, Westminster, London.

To save time by having assembled in one volume information on structural design for steel and reinforced construction, the author has sought in this volume to present the entire subject. This book is prepared for the engineer who earns his livelihood by working at his profession. It accepts the basic theory of structural design and applies it in the formulation of data that bear directly on the case.

It is assembled particularly for the engineer familiar with the actual problems of construction to eliminate much of the drudgery usually inherent in such work. Most of the tables cover their subjects in an entirely new manner and are universal in application.

With this volume, the author asserts, the engineer needs no other authority or reference for solving ordinary problems.

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Making the Most *of* METHODS AND MATERIALS

ALTHOUGH numerous mechanical tests of various types have shown that a heat-treated galvanized bridge wire is somewhat more sensitive to certain kinds of stresses than a cold-drawn galvanized wire, the results of the study also have indicated that the failure of the bridge cables composed of the heat-treated wire was the result of combined stresses rather than simple tensile stresses. A method was developed for testing wire under pulsating tensile stresses, and tests were conducted with the mean stress between 50,000 and 156,000 pounds per square inch.

$ $ $

In England burned sugar (caramel) is added to whiskey for coloring. A monel metal burning pan installed by one distillery gave such satisfactory service for four years that another pan was ordered. Cast-iron pans used previously contaminated the sugar and caused a cloudy effect in the whiskey.

$ $ $

A line of porcelain enameled steel industrial lighting fixtures made by a midwestern manufacturer employs heavy-gage steel wire guards to protect both the diffusing bowl and the lamp from damage. This guard, to which the diffusing bowl is attached for easy cleaning and relamping of the fixture, is cadmium plated to prevent rust and to afford pleasing appearance. The plating is ductile and will stand severe bending without flaking or chipping. Furthermore, it is soldered easily.

$ $ $

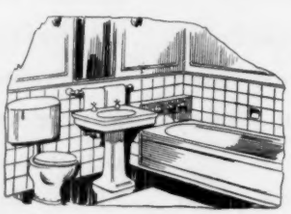
PARACHUTES made by an American manufacturer are noted for their dependability, as is attested by the fact that the lives of over 600 flyers have been saved by their use, and that the air forces of 30 governments, including the United States, have adopted them as standard equipment. The small metal fittings which have to withstand the sudden stress when the downward plunge is arrested are made from S. A. E. 2330, 3.5 per cent nickel steel heat treated for maximum toughness and shock resistance.

$ $ $

As available data on cast-iron water pipe cast horizontally by the multiple-gate process were insufficient, the bureau of standards last year tested a series of these pipes. Chemical and metallographic examinations and mechanical tests were made on pipes 4, 6, 8 and 12 inches in diameter. The results indicated that satisfactory cast-iron pipe is made by the multiple gate process.

$ $ $

Chromium plating is comparatively new for plumbing fixtures and has become quite popular. A great deal of laboratory testing was required to determine the best method of plating and still is necessary to keep



posted on current developments. Some pieces have been under observation on time exposure test for several years. Plating tests include exposure to both inside and outside air, to salt solution spray and to temperatures up to approximately 212 degrees Fahr.

$ $ $

The pronounced increase in the toughness, or impact strength, of gray iron imparted by molybdenum has been from the first one of the most striking characteristics of this alloy. Though it remains one which has been demonstrated the least as regards numerical determination of impact strength, it has demonstrated abundantly by foundrymen and by engineers, observing the number of blows before fracture and the nature of the fracture, who have used the homely but very reliable sledge hammer method. Molybdenum iron gear teeth do not fly out; they tear out from the base of the tooth and bend appreciably before parting.

$ $ $

DECOMPOSITION of austenite during the hardening of a steel has been studied by measuring the changes in electric resistance that take place during the rapid cooling. Quenching rates at the temperatures of the transformations have been determined and a temperature-quenching rate-constitution diagram has been constructed representing the behavior of the steel during uninterrupted quenching. An automatic thermal analysis apparatus was developed for use in this work.

$ $ $

Locomotive cylinder and pump piston rings are renewed because they lose their tension or snap, for a ring that has lost its tension will not press tightly against the cylinder wall. Until recent years there was no known economical method for reclaiming dead rings, but by experimenting with heat supplied from an oxyacetylene flame applied to the outside surface for the full circumference of the ring, raising it to a blue heat and allowing to cool in the air, the snap is revived. Rings reclaimed in this manner are said to serve the same purpose as new rings. Cost is difficult to figure, because only a few seconds time is required per ring.

$ $ $

A report has been published on the resistance to creep and the structural stability of iron-nickel-chromium alloys at 871 degrees Cent. The strongest alloys were those containing approximately equal parts of nickel and chromium and not more than 30 to 40 per cent iron. A condition of structural stability was approached more rapidly in alloys subjected to elevated temperature and stress combined than in alloys exposed to elevated temperature alone.

ADVERTISING PAGES REMOVED

PROGRESS IN STEELMAKING

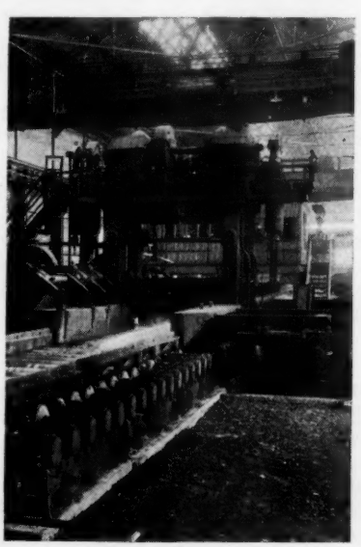
DENSITY of smoke passing through stacks or breechings of steelworks power plants now may be indicated on a meter or a continuous record may be had by using a recording instrument.

• • •

Heavy tacky roll neck greases are handled by a new pumping unit which is built with a grease hopper, the temperature of which is thermostatically controlled. A barrel-lifting device enables one man to empty a barrel of grease into the hopper without shoveling or scraping. To accomplish this the operator fastens a clamp around the barrel and turns a crank handle until the stops on the cradle prevent further travel. Backing off several turns of the crank lowers the barrel until it rests on two trunnions directly over the hopper. The barrel then is turned upside down and clamped into position. Heat from the hopper dislodges the grease after a short period.

• • •

More than 20 million operations without the necessity of replacing any major parts is afforded by an alternating-current brake of the clapper type recently developed for motors actuating sheet mill catcher and feeder tables.



• • •

Slightly less than 2 horsepower is the continuous running load of sheet mill feeder and catcher table motors, according to test data.

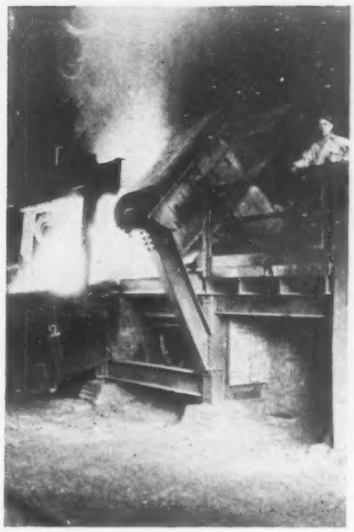
• • •

Storing bright finished wire in a room lined with tar paper and heated with steam during the winter months delays surface oxidation and increases its life three to four times.

UNUSUAL safety features are incorporated in a newly marketed hand truck for gas welding and cutting equipment. These include a hook-eye at the top of the truck to permit transportation by crane where necessary, and another auxiliary hook-eye at the bottom front end; built-in heavy asbestos board fire screen between tanks; hose hook; large sized wheels with double roller bearings and solid rubber tires; resilient rubber pad mounting between bottom plates; tool box with locking provision; fire extinguisher holder; fabric lined tank clamps with latches, and a safety continuous handle. The truck is fabricated mainly from steel angles and pipe, with welded joints, making a compact and distortion-resisting unit.

• • •

Three stands of a continuous mill in the Pittsburgh district now are chain driven. The roughing rolls are actuated from the intermediate stand which in turn is driven from the finishing stand. The chain drive from the first stand transmits from 300 to 1000 horsepower; while that from the third to second stand transmits from 600 to 2000 horsepower. Roll speeds range from 25 to 56 revolutions per minute. The bearings are carried separately on foundations. Center distances may be varied easily. This type drive is claimed to cushion shocks, to show minimum vibration, and to be efficient and quiet.



• • •

Cost of drying out the wells in open-hearth ladles has been greatly reduced by a Mid-western steel maker. Between heats, a small ladle of hot slag is placed in the steel ladle the heat thus supplied being sufficient to dry out the wells. The initial drying out and heating, however, is accomplished with fuel oil.

• • •

Actuation of a reel serving a cold strip mill in Ohio is accomplished by a photronic system. A standard reflector-type fixture containing a 100-watt lamp is suspended above the rolling plane at the rear of the finishing stand. As the strip leaves the rolls it intercepts the beam of light passing from the overhead lamp to a photoelectric cell located beneath the runout table and rolling plane. The photronic cell immediately operates an electric relay; this releases the brake which holds the reel at rest and starts the motor driving the coiler. With the various steps in the process synchronized, the actuations occur instantly, the reel taking the end of the oncoming strip and starting the coiling operation, and, at the same time, maintaining the proper tension of the strip between the mill and reel.

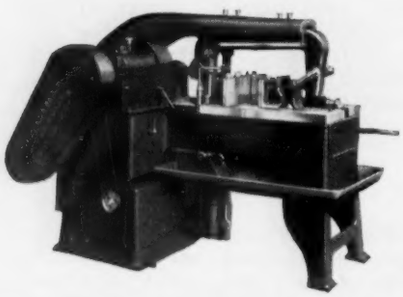
NEW EQUIPMENT

PRODUCTION FABRICATION
TREATMENT FINISHING

Magnetic Clutches—Magnetic Mfg. Co., Milwaukee, recently introduced multiple disk magnetic clutches in new small sizes, 6 inches in diameter and larger. The units can be used in either wet or dry operations. Their use is permissible in oil, water, or any other similar liquid. A simple one-point adjustment compensates for lining wear. The clutches are built with from 2 to 8 disks and a complete line of all sizes is available.

♦ ♦ ♦

Power Saw—Racine Tool & Machine Co., Racine, Wis., has placed on the market a new hydraulic shear cut machine, shown herewith. A single control lever gives the operator instant control of feed, rapid traverse and clutch. The amount of feed is regulated by a dial graduated to provide ample range for cutting



all classes and widths of metal. Connection between saw guide and main hydraulic cylinder is accomplished by means of two tension rods on each side of the frame, extending down through the table and attached to the piston rod.

♦ ♦ ♦

Grinders—Hanchett Mfg. Co., Big Rapids, Mich., recently developed new grinding equipment to meet the requirements of grinding the ends of coil springs employed in independent automobile springing arrangements. The No. 72 unit grinds ends of coil springs which are approximately 10 inches long, while the No. 221 unit grinds simultaneously both ends of coil springs 2 inches long.

♦ ♦ ♦

Motor-Driven Carrier—Cleveland Tramrail division of Cleveland Crane & Engineering Co., Wickliffe, O., is marketing for operation on its tramrail systems a new type WTH carrier. It is designed to meet the demand for speed from a "creep" to a rate not in excess of that at which an operator can walk. This carrier can be obtained with electric hoist of 500, 1000 or 2000 pounds capacity. Control is provided by magnetic contactors through pushbuttons suspended from a swinging arm.

♦ ♦ ♦

Milling Machine—Kent-Owens Machine Co., Toledo, O., has brought out a new milling machine that embodies a combination of double spindles with variable speed drive. Center distance between the spindles is adjustable over a wide range which, with the variable spindle speed drive, fits this machine for handling a variety of operations. Proper adjustment in spindle speed and center distance to allow for cutter wear can be quickly and easily made.

♦ ♦ ♦

Track Grinder—Cyril A. Fox, 1703 Oliver building, Pittsburgh, has developed a high-speed track grinder for finishing and smoothing welded joints, corrugations and worn or battered rail ends. Axis of the grinding wheel is disposed obliquely to the rail, thereby eliminating transverse corrugations. The unit is built in both gas engine and electric motor-operated types. It folds to a width of 18 inches at a height of 10 inches above the base of the machine, and a width of 28 inches below the 10-inch height, so that liberal clearance is provided when the rail grinder is placed in the 6-foot clearance space between two parallel lines of track.

♦ ♦ ♦

Numbering Machines — Wetter Numbering Machine Co., Atlantic avenue and Logan street, Brooklyn, N. Y., is manufacturing a line of machines for stamping flat or raised figures on metal. The unit can be adjusted to any power or lever press, the shank being made to fit the press. Parts may be numbered as fast as they can be handled by the operator. Numbers advance automatically.

♦ ♦ ♦

Electric Furnace—Pittsburgh Lectromelt Furnace Corp., P. O. box 1125, Pittsburgh, is marketing a new 25-pound small arc furnace which operates with either direct, indirect or submerged arcs. The furnace body may be removed conveniently from its stand and the melt poured off as from a shank ladle. If desired it also may be tapped. This furnace has an unusually wide range of usability such as melting, refining and alloying irons and steels, melting ferroalloys and nonferrous metals and alloys, for fusion investigations and ore reductions, etc.

♦ ♦ ♦

Timing Contactor — Automatic Temperature Control Co. Inc., 34 East Logan street, Philadelphia, is offering a new design of adjustable timing contactor built for plant operation. Power is obtained from a reversing synchronous motor. The contact arm moves alternately clockwise and counter-clockwise within the time limit set.

♦ ♦ ♦

Stiffness Tester — Smith-Taber, North Tonawanda, N. Y., recently introduced a unit for measurement of stiffness and resiliency of materials such as metals, wire, sheet, paper, textiles, etc. It is particularly notable, according to the manufacturer, that this instrument accurately tests the range of materials that cannot be tested for hardness by the usual methods, due to thinness or small diameter.

♦ ♦ ♦

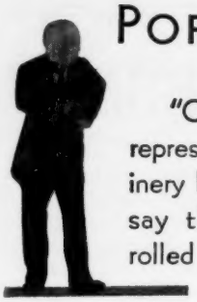
Roll Feeding Straightener—Waterbury Farrel Foundry & Machine Co., Waterbury, Conn., has developed a small size roll feeding straightener, a new unit in the line of auxiliary press equipment. It is used principally to flatten and feed coiled strip stock, and to remove the drag of the coil from the roll feed or from the operator, depending on whether the press is hand fed or automatic. The machine is automatic and will deliver a specified length of stock within close limits. Length of feed is adjustable to cover a wide range.

♦ ♦ ♦

Bearing Thermostat—Electric Controller & Mfg. Co., 2700 East Seventy-ninth street, Cleveland, recently developed a bearing thermostat for protecting motor-driven and other types of rotating machinery from breakdowns due to overheated bear-

CONFORMING to its established policy of conciseness, STEEL now presents announcements and descriptions of new equipment in brief but comprehensive form. Full particulars concerning any item on this page may be obtained direct from the manufacturer.

LISTENING IN ON POP AND LAD



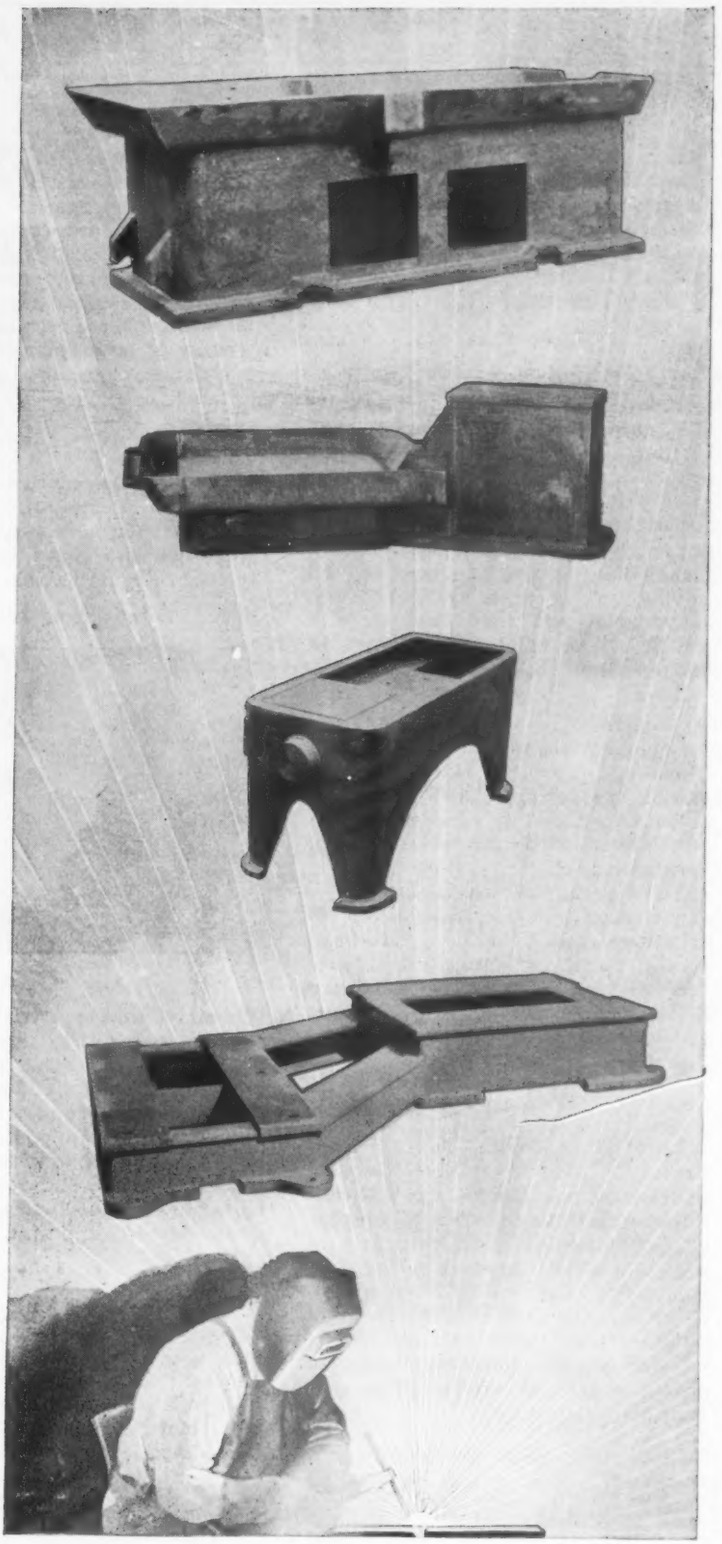
"Over there is quite a representative lot of machinery bases, Lad. And you say they're all built of rolled steel arc welded."

"... which means, Pop, that pound for pound they're stronger and stiffer than cast bases."

"Of course arc-welded rolled steel construction will give all you want in strength and at the same time save weight, but never before did I realize that you can get all these advantages plus pleasing appearance. These arc-welded bases have an eye appeal that helps make sales."

"And they have a cost appeal which will satisfy your Scotch instinct. Your profit-loving nature will demand that the bases you build shall be welded by the shielded arc with Lincoln *'Shield-Arc'* welders and *'Fleetweld'* electrodes. They're guaranteed three ways to give:

1. More weld metal deposit per K. W. H.
2. Faster welding per K. W. H.
3. Lower cost per unit of welding—the unit being per lineal foot of weld, or per pound of weld metal, or per hour of welding."



LINCOLN

THE LINCOLN ELECTRIC COMPANY, CLEVELAND, OHIO

Largest Manufacturers of Arc Welding Equipment in the World

W-62

ings. These thermostats are particularly well suited for use in connection with automatic pumping stations, motor-driven fans, automatic electric substations, conveyor systems, compressors, etc. A rise in the temperature of a bearing operates the devices to shut down the machine.

♦ ♦ ♦

Panelboards — Square D Co., Switch and Panel division, Detroit, is manufacturing a line of safety convertible power panels. These units are designed for power and feeder installations where circuits do not exceed 100 amperes, 250 volts. They are obtainable for either flush or surface mounting and are mounted in cabinets. The panels are dead front convertible, and individual circuits can be locked in either the "on" or "off" position.

♦ ♦ ♦

Grinder—Hisey-Wolf Machine Co., Cincinnati, recently placed on the market a wide range precision grinder built in a variety of sizes. These units are adaptable for use with lathe, boring mill, planer, milling machine, etc. and permit the use of any shape of grinding wheel. In addition to grinding rolls, bearings, journals, tapers, mandrels, cutters, dies, surface plates, etc., the grinders are suited for production work. They are constructed for heavy and continuous duty.

♦ ♦ ♦

Lubricating Device—Journal Lubricator Co., 939 West North avenue, Pittsburgh, has developed a self-contained lubricating unit. It consists of a cylindrical felt pad which is held against a journal by clock spring steel bands, and is prevented from rolling by an arrangement of spidered chain links. In the steel and allied industries it is particularly applicable to cranes and other equipment to prevent drippage of oil.

♦ ♦ ♦

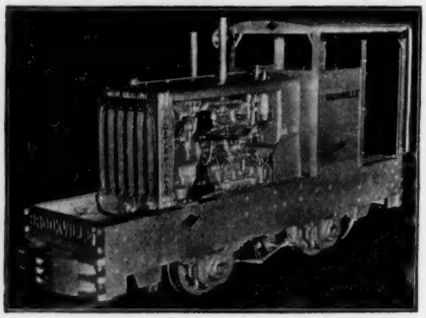
Taps—Winter Bros. Co., Wrentham, Mass., has announced a line of high-speed taps ground after hardening. These tools are manufactured to the recently adopted standard commercial ground thread tolerances insuring correct lead and thread form, uniformly smooth threads and accurate pitch diameter tolerances (0.001-inch). The taps are radially relieved in the threads after hardening.

♦ ♦ ♦

Thread Gages—Sheffield Machine & Tool Co., Dayton, O., is marketing a line of plug and ring thread gages and rapid lead checking instruments. The precision thread gages are manufactured from special alloy steel, hardened to insure wearing qualities. A screw thread lead testing machine also has been announced. Utilizing any type precision gage block, the unit enables those responsible for the accuracy of large quantities of gages to obtain dependable results in a minimum of time.

♦ ♦ ♦

Industrial Locomotive—Caterpillar Tractor Co., Peoria, Ill., recently announced that a new 6-ton Brookville locomotive powered with a Caterpillar diesel engine has been developed.



Chassis of this industrial locomotive, shown herewith, incorporates a double structural steel frame, the engine and transmission being mounted separately on a sub-frame inside the main frame. Another feature is the four-speed sliding gear transmission, with an all speed reverse. Dual spring suspension for cushioning also is embodied in the unit.

♦ ♦ ♦

Pipe Cutting Unit—Linde Air Products Co., 30 East Forty-second street, New York, has designed a pipe cutting and beveling machine. This unit will take almost any hand-cutting blowpipe, is readily portable, and simple in operation. Once centered in the pipe, the turning of a crank rotates the blowpipe to make a clean machine-like cut.

♦ ♦ ♦

Bending Roll—Kane & Roach Inc., Syracuse, N. Y., recently developed a wrapping type bending roll to bend I-beams for such applications as rims for electric cable reels. The stock is bent to practically a true circle complete to the ends, eliminating waste on the ends. Electrical control with forward-reverse-stop push-button is located conveniently; in addition the machine is provided with a friction clutch operated by a hand lever.

♦ ♦ ♦

Polishing Sleeves—Cleveland Container Co., Abrasive division, 1042 Berea road, Cleveland, has introduced endless abrasive polishing sleeves coated with genuine Turkish emery for use with its expanding polishing wheels. The sleeves were developed to enable polishing room superintendents to obtain high luster on aluminum, steel and other metals. It is pointed out that these sleeves can be used dry or with grease, oil or emery cake.

♦ ♦ ♦

Sight Meter—Sight Light Corp., Chrysler building, New York, is marketing a sight meter or measuring device that not only indicates intensities of light in foot-candles but also classifies them according to the various seeing tasks. The device therefore enables a person to check the light intensity under which he is using his eyes. In addition to checking seeing conditions the sight meter also is useful in the maintenance of lighting systems.

♦ ♦ ♦

Electric Hoist—Electro Lift Inc., 30 Church street, New York, has announced a twin hook electric hoist for long and bulky loads, furnace doors, sections of monorail track, etc. The unit is built in capacities ranging from 500 to 6000 pounds. Two drums, operating together, are mounted on an extended drum shaft that may be of any length to allow the hooks to be spaced to meet individual requirements.

♦ ♦ ♦

Sandblast Machine—W. W. Sly Mfg. Co., 4712 Train avenue, Cleveland, has developed a new sandblast machine applicable to a variety of purposes such as cleaning of castings, forgings, heat treated steel parts, structural steel parts, tanks, etc. The pressure blast tank is operated by a single control valve. Its effective capacity is about 3 cubic feet, represented by the amount of abrasive that will flow into the tank and out of it.

♦ ♦ ♦

Motors—Emerson Electric Mfg. Co., 2018 Washington avenue, St. Louis, is offering an improved line of split-phase motors featuring steel field rings, smaller dimensions, and rigid or resilient mountings. The units are suitable for small pumps, compressors, drill presses, lathes, fans, blowers, etc.

Confidence Firm, Despite Drop in Steel Rate

Early Resumption of Upward Trend Expected—Heavy Railroad and Automobile Tonnnage Regarded as February Development — Shape Awards Up Moderately

UNDISMAYED by the failure of steelworks operations to continue upward last week, the industry still looks forward confidently for broadening demands to supply a fresh impetus shortly.

Unexpected curtailment, due to delay in railroad and automotive tonnages, interrupted the upward sweep of operations for the first time this year, the average rate declining 2 points to 33 per cent last week, with indications that this week it will continue at this level, or advance.

In the automobile industry, steel stocks acquired late last year are less of an obstacle to new purchases than difficulties still encountered with the mechanical features of new models. Manufacturers have in hand orders for 200,000 cars and without exception are striving to bring production up as rapidly as possible. Ford has released 10,000 tons of sheets; General Motors' specifications also have been rising moderately, accounting for some improvement in mill operations.

Railroads Tabulating Bids; Codes To Be Enforced on All Public Work Materials

With railroads, the delay is due chiefly to two factors: First, reluctance to purchase rails and pay interest charges in advance of the time when the rails can be laid; second, details involved in federal financing; and the task of tabulating bids.

Washington NRA officials have issued an amendment to regulations governing public work, which may tend to retard awards to contractors and indirectly steel buying. In projects in which federal funds are to be used, all work must be done and all materials produced either under specific trade codes, or where no codes exist, in accordance with the President's reemployment agreement. Structural shape awards for the week rose moderately to 15,990 tons.

It now appears that several hundred thousand tons of railroad car plates and shapes, chiefly requirements for the Van Sweringen lines, will not be ready for rolling until the middle of February. For these lines, 12,775 cars may be awarded this week, bids from more than 16 carbuilders on complete cars as well as parts still being tabulated. The Pennsylvania railroad opens bids Feb. 5 on 21,000 tons of rolled steel, 18,000 car wheels and 3000 axles. John Morrell & Co. Inc., Ottumwa, Iowa, meat packers, have awarded 150 refrigerator cars.

Japan, bidding against American, British, French and German manufacturers, has taken 25,000 tons of cast pipe for Mexico City. Miami, Fla., has awarded 8000 tons to the United States Pipe & Foundry Co. Army engineers at Kansas City, Mo., are to close on 4000 tons of cast pipe Feb. 2, and a federal loan has been granted New Bedford, Mass., to buy 7500 tons. The navy department has divided an order for 5280 tons of armor plate among three producers.

Advance in Sheet Prices Reported Impending; Scrap Levels Off; Pig Iron Shipments Gain

Increasing attention is being given to finished steel prices, but except for a reduction in stainless steels, action is being deferred. An advance in sheets and strip prices is regarded as a probability.

Further increases in scrap prices are noted at Chicago, but the rising trend in progress for the past two months has leveled off. Pig iron shipments are improving aided by better automotive foundry schedules.

Steelworks operations last week advanced 5 points to 64 per cent at Cleveland, and 1 to 30 at Chicago. They dropped 33 points to 46 at Detroit; 5 to 32 at Youngstown; 2 to 22, Pittsburgh; and 1 to 23½, eastern Pennsylvania. New England remained at 86; Wheeling, 64; Birmingham, 52; Buffalo, 32.

If increases scheduled for this week in eastern Pennsylvania, Youngstown and Buffalo are realized, and Chicago, Cleveland, Wheeling, Birmingham and Detroit districts remain steady, they will more than offset the anticipated declines in the Pittsburgh and New England districts.

STEEL's London cablegram states British tin plate manufacturers fear some mills will be forced to close owing to depreciation of the dollar.

STEEL's iron and steel composite is unchanged at $32.43; and the finished steel composite, $51.10. Scrap is up 4 cents to $11.54 from the adjusted composite of last week.

COMPOSITE MARKET AVERAGES

	Jan. 27	Jan. 20	One Month Ago Dec., 1933	Three Months Ago Oct., 1933	One Year Ago Jan., 1933	Ten Years Ago Jan., 1924
Iron and Steel Composite	$32.42	$32.42	$32.42	$31.59	$28.68	$43.26
Finished Steel Composite	51.10	51.10	51.10	49.20	46.13	67.71
Steelworks Scrap Composite	11.54	*11.50	10.12	10.37	6.22	18.23

Iron and Steel Composite:—Pig iron, billets, slabs, sheet bars, wire rods, tin plate, nails, sheets, plates, shapes, bars, and black pipe. Finished Steel Composite:—Plates, shapes, bars, hot strip, nails, tin plate, pipe. Steelworks Scrap Composite:—Heavy melting steel and compressed sheets.
*Revised.

A COMPARISON OF PRICES

Representative Market Figures for Current Week; Average for Last Month, Three Months and One Year Ago

	Jan. 27, 1934	Dec. 1933	Oct. 1933	Jan. 1933
Finished Material				
Steel bars, Pittsburgh	1.75	1.75	1.75	1.60
Steel bars, Chicago	1.80	1.80	1.80	1.70
Steel bars, Philadelphia	2.04	2.04	2.04	1.91
Iron bars, Terre Haute, Ind.	1.60	1.60	1.60	1.65
Shapes, Pittsburgh	1.70	1.70	1.70	1.60
Shapes, Philadelphia	1.90	1.90½	1.90½	1.70
Shapes, Chicago	1.75	1.75	1.75	1.70
Tank plates, Pittsburgh	1.70	1.70	1.70	1.60
Tank plates, Philadelphia	1.88	1.88½	1.88½	1.66
Tank plates, Chicago	1.75	1.75	1.75	1.70
Sheets, No. 10, hot rolled, Pitts.	1.75	1.75	1.75	1.65
Sheets, No. 24, hot ann., Pitts.	2.25	2.25	2.25	2.05
Sheets, No. 24, galvan., Pitts.	2.85	2.85	2.85	2.70
Sheets, No. 10, hot rolled, Gary	1.85	1.85	1.85	1.80
Sheets, No. 24, hot anneal., Gary	2.35	2.35	2.35	2.25
Sheets, No. 24, galvan., Gary	2.95	2.95	2.95	2.85
Plain wire, Pittsburgh	2.20	2.20	2.10	2.15
Tin plate, per base box, Pitts.	5.25	5.25	4.65	4.25
Wire nails Pittsburgh	2.35	2.35	2.10	1.90
Semifinished Material				
Sheet bars, open-hearth, Youngs.	26.00	26.00	26.00	26.00
Sheet bars, open-hearth, Pitts.	26.00	26.00	26.00	26.00
Billets, open-hearth, Pittsburgh	26.00	26.00	26.00	26.00
Wire rods, Pittsburgh	36.00	36.00	35.00	36.20

	Jan. 27, 1934	Dec. 1933	Oct. 1933	Jan. 1933
Pig Iron				
Bessemer, del. Pittsburgh	19.26	19.26	19.26	15.76
Basic, valley	17.00	17.00	17.00	14.00
Basic, eastern, del. eastern Pa.	18.76	18.76	17.76	13.56
No. 2 foundry, del. Pittsburgh	18.76	18.76	18.76	15.76
No. 2 foundry, Chicago	17.50	17.50	17.50	15.50
Southern No. 2, Birmingham	13.50	13.50	13.50	11.00
No. 2X, Eastern, del. Phila.	19.63	19.63	18.63	18.76
Malleable, valley	17.50	17.50	17.50	14.50
Malleable, Chicago	17.50	17.50	17.50	15.50
Lake Superior charcoal, del. Chi.	23.54	23.54	23.54	23.04
Gray forge, del. Pittsburgh	18.38	18.38	18.38	15.63
Ferromanganese, del. Pittsburgh	90.24	87.24	87.24	73.24
Scrap				
Heavy melting steel, Pittsburgh	$13.50	12.20	12.45	8.35
Heavy melting steel, eastern Pa.	11.75	10.25	10.19	6.50
Heavy melting steel, Chicago	10.75	9.00	9.35	5.25
No. 1 wrought, eastern Pa.	12.75	11.00	10.75	6.50
No. 1 wrought, Chicago	10.35	8.45	9.10	5.00
Rails for rolling, Chicago	11.75	10.35	11.10	8.05
Coke				
Connellsville, furnace, ovens	3.50	3.75	3.25	1.75
Connellsville, foundry, ovens	4.25	4.25	3.85	2.50

Steel, Iron, Raw Material and Metals Prices

Prices conform to American Iron and Steel institute schedules. Asterisks denote price changes this week

Sheet Steel

HOT ROLLED No. 10
(24 to 48 inches wide)

Pittsburgh, base	1.75c
Gary, base	1.85c
Chicago, del.	1.88c
New York, del.	2.08c
Philadelphia, del.	2.04c
Birmingham, base	1.90c
St. Louis, del.	2.07c
F.o.b. cars, dock Pacific ports	2.42½c

HOT ROLLED ANN. No. 24

Pittsburgh, base	2.25c
Gary, base	2.35c
Chicago, del.	2.38c
Detroit, del.	2.45c
New York, del.	2.58c
Philadelphia, del.	2.54c
Birmingham, base	2.40c
St. Louis, del	2.57c
F.o.b. cars, dock, Pacific ports	2.95c

GALVANIZED No. 24

Pittsburgh, base	2.85c
Gary, base	2.95c
Chicago, del.	2.98c
Philadelphia, del.	3.14c
New York, del.	3.18c
Birmingham, base	3.00c
St. Louis, del	3.17c
San Francisco, f.o.b. cars, dock	3.55c

TIN MILL BLACK No. 28

Pittsburgh, base	2.65c
Gary, base	2.75c
St. Louis, del.	2.97c

COLD ROLLED No. 10

Pittsburgh, base	2.30c
Detroit, delivered	2.50c
Gary, base	2.40c
Philadelphia, del.	2.59c
New York, del.	2.63c

COLD ROLLED No. 20

Pittsburgh, base	2.75c
Detroit, delivered	2.95c
Gary, base	2.85c
Philadelphia, del.	3.04c
New York, del.	3.08c

ENAMELING SHEETS

Pittsburgh, No. 10	2.45c
Pittsburgh, No. 20	2.90c

Tin and Terne Plate

Per 100-lb. box, Pittsburgh. Gary base, 10 cents higher

Tin plate, coke base, contract	$5.25
Do., stock	4.55
Long ternes, No. 24 unassorted	3.25c

Corrosion and Heat Resistant Alloys

Base, Pittsburgh

18% chrome, 8% nickel; sheets, 35c; plates, 28c; bars, 24c; hot-rolled strip, 24.50c; cold-rolled strip, 32.00c.

	A	B	C	D
Bars	17c	18.5c	21c	26c
Plates	20c	21.5c	24c	29c
Sheets	25c	28c	31c	35c
Hot strip	17c	18.5c	21c	26c
Cold strip	22.5c	24c	27c	35c

Carbon 0.12 and under; no nickel. A has chrome 15% and under. B over 15/18% inc., C over 19/23% inc., D over 23/30%.

Steel Plates

Pittsburgh, base	1.70c
New York, del.	1.98c
Philadelphia, del	1.88½c
Boston, del.	2.10c
Buffalo, del	1.93½c
Chicago, base	1.75c
Cleveland, del.	1.88½c
Birmingham, base	1.85c
Coatesville, base	1.80c
Sparrow's Pt., base	1.80c
Pacific Coast, f.o.b. cars, dock	2.25c
St. Louis del	1.97c

Structural Shapes

Pittsburgh, base	1.70c
Philadelphia, del.	1.90½c
New York, del.	1.95½c
Boston, del.	2.08½c
Bethlehem, base	1.80c
Chicago, base	1.75c
Cleveland, del.	1.88½c
Buffalo, base	1.80c
Birmingham, base	1.85c
Pacific Coast, f.o.b. cars, dock	2.25c

Bars

SOFT STEEL

Pittsburgh, base	1.75c
Chicago, base	1.80c
Birmingham, base	1.90c
Buffalo, base	1.85c
Cleveland, base	1.80c
Detroit, del.	1.90c
Pacific Coast ports, cars, dock, c.i.f.	2.30c
Philadelphia, del.	2.04c
Boston, del.	2.19c
New York, del.	2.08c
Pitts., forg. qual.	1.75c-2.25c

RAIL STEEL
To Manufacturing Trade

Pittsburgh	1.65c
Chicago	1.70c
Cleveland	1.70c
Gary, Ind.	1.70c
Buffalo	1.75c

IRON

Terre Haute, Ind. base	1.60c
Philadelphia, base	1.74c
Pittsburgh, refined	2.75c-7.50c

REINFORCING
New billet, cut lengths, carlots

Pittsburgh	1.90c
Chicago, Gary, Buffalo, Cleve., Birm., Young	1.95c
Gulf ports	2.30c
Pacific coast ports	2.45c
Philadelphia, del.	2.19c

Rail steel

Pittsburgh, base	1.75c
Chicago, Buffalo, Cleveland, Birm., Young.	1.80c
Gulf ports	2.15c
Pacific coast ports	2.30c

Wire Products □ □

(Prices apply to straight or mixed carloads; pool cars, or less, 10c up. 10% dis. on nail extras on straight or mixed carloads to one consignee.)

Base, Pittsburgh-Cleveland
(Per 100-lb. keg)

Standard wire nails	$2.35
Cement coated nails	2.35
Galvanized nails, 15 gage and coarser	4.35c
Do., 16 gage and finer	4.85c

(Per pound)

Polished staples	3.05c
Galvanized fence staples	3.30c
Barbed wire, galv.	2.85c
Annealed fence wire	2.35c
Galvanized fence wire	2.70c
Woven wire fencing (base column, c.l.)	$60.00
Plain wire, 6-9 gage to mfg trade	2.20c

Anderson, Ind., Chicago up $1; Duluth up $2; Birmingham up $3.

Spring wire	3.20c

Chicago and Waukegan $1 higher, Worcester $2 higher.

Cold-Finished Carbon Bars

Base Pitts., one size, shape, grade, shipment at one time to one destination

10,000 to 19,999 lbs.	2.10c
20,000 to 59,999 lbs.	2.05c
60,000 to 99,999 lbs.	2.00c
100,000 lbs. and over	1.97½c

Chicago, Cleveland, up 5c; Buffalo, up 10c; Detroit, up 20c; eastern Michigan, up 25c.

Shafting □ □ □

Turned and ground, Pitts. base	
1⅛-inch	3.40c
1⅛ to 1½-inch	2.90c
1⅝ to 1⅞-inch	2.75c
1⅛ to 2⅞-inch	2.60c
*2⅛ to 7-inch	2.45c

Alloy Steel Bars □

Hot rolled

Pittsburgh, Buffalo, Chicago, Massillon, Canton	2.45c
Bethlehem	2.55c

Alloy	Diff.	Alloy	Diff.
S.A.E.		S.A.E.	
2000	0.25	3100	0.55
2100	0.55	3200	1.35
2300	1.50	3300	3.80
2500	2.25	3400	3.20

4100 .15 to .25 Mo.	0.50
4600 .20 to .30 Mo. 125-1.75 Ni.	1.05
5100 .80-1.10 Cr.	0.45
5100 Cr. spring	base
6100 bars	1.20
6100 spring	0.70
Cr., Ni., Van.	1.50
Carbon van	0.95
9250.....carbon base plus extras	

Strip and Hoops □

Hot strip to 23⅞-in.	
Pittsburgh	1.75c
Do., Chicago	1.85c
Do., del. Detroit	1.95c
Do., del. Phila.	2.04c
Do., del. N. Y.	2.08c
Cooperage hoop, Pittsburgh	1.85c
Do., Chicago	1.95c
Cold-rolled strip, Pitts., Cleve.	2.40c
Worcester	2.60c

Rails, Track Material □

(Gross Ton)

Standard rails, mill	$36.37½
Relay rails, Pitts.	
20-45 lbs.	$26.00
50-60 lbs.	$23.00
70-75 lbs.	$18.00
80-85 lbs.	$24.00
100 lbs.	$25.00
Light rails, billet qual., Pitts., Chi.	$32.00
Do., reroll. qual.	$31.00
Angle bars, mills	2.55c
Spikes, R. R., base	2.40c
Track bolts, base	3.55c
Tie plates, base	1.90c

Base, light rails 25 to 40 lbs.; 50 to 60 lbs. inclusive up $5; 16 and 20 lbs., up $1; 12 lbs., up $2; 8 and 10 lbs., up $5. Base railroad spikes 200 kegs or more; base tie plates 20 tons or more; diff. for less.

Bolts and Nuts □ □

Pittsburgh, Cleveland, Birmingham, Chicago. Discounts to legitimate trade for all case lots. Dec. 1, 1932, lists.

CARRIAGE BOLTS

All sizes, cut thread	70 off
Rolled thread, ½ x 6 and smaller	70 off

MACHINE BOLTS

All sizes, cut thread, lag screws, plow bolts, Nos. 1-2-3-7 heads, tap bolts, blank bolts, stud bolts without nuts	70 off
Tire bolts	60 off
Stove bolts, 70-25-10 off in pkgs.; 83 off in bulk, 5000 or more of a size.	
Rolled thread machine bolts, ½ x 6 and smaller,	70 off
Step bolts	66 off
Elevator bolts	66 off

NUTS

Semifinished	70 off

HEXAGON CAP SCREWS

Milled	80-10-10 off
Upset 1-in., smaller	85 off

SQUARE HEAD SET SCREWS

Upset, 1-in., smaller	75-10 off
Upset, larger than 1-in.	75-10 off
Headless set screws	75 off

Rivets, Wrought Washers

Struc., c.l., Pittsburgh, Cleveland	2.75c
Struc., c.l., Chicago	2.85c
⅞-in. and smaller, Pitts., Chi., Cleve.	70 and 10 off
Wrought washers, Pitts., Chi., Phila.	6.00-6.25 off

Cut Nails, Piling □

Cut nails, Pitts.; (10% discount on size extras)	$2.75
Do. less carloads, 5 kegs or more; no discount on size extras	$3.00
Do., less than 5 kegs; no discount on size extras	$3.15
Steel piling, Pittsburgh	2.00c
Steel piling, Chi., Buff.	2.10c

Pipe and Tubing

Base $200 net ton, except on standard commercial seamless boiler tubes under 2 inches and cold drawn seamless tubing.

Welded Iron, Steel Pipe

Base discounts on steel pipe, Pitts., Lorain, O., to consumers in carloads. Gary, Ind., 2 points less. Chicago delivered 2½ points less. Wrought pipe, Pittsburgh base.

BUTT WELD

In.	Blk.	Gal.
Steel		
¼ and ⅜	57	38½
½	62	50½
¾	65½	55½
1—3	67½	58½
Iron		
½	31½	15
¾	36½	20½
1—1¼	39½	25½
2	41½	26

LAP WELD

Steel		
2	63½	54½
2½—3	66½	57½
3½—6	68½	59½
7 and 8	67½	57½
9 and 10	67	57
Iron		
2	37	22½
2½—3½	38	25
4—8	40	28½
9—12	38	24½

LINE PIPE

Steel	
⅛-inch, butt weld	50½
¼—⅜, butt weld	56
½, butt weld	61
¾, butt weld	64½
1—3, butt weld	66½
2-inch, lap weld	62½
2½—3, lap weld	65½
3½—6, lap weld	67½
7—8, lap weld	66½
Iron	

⅛—1½ inch, black and galv. take 4 pts. over; 2½—6 inch 2 pts. over discounts for same sizes, standard pipe list. 8—12 inch no extra.

BOILER TUBES

C. L. Discounts, f.o.b. Pitts.

Lap Weld Steel		Charcoal Iron	
2—2¼	33	1¾	8
2½—2¾	40	2—2¼	13
3	47	2½—2¾	16
3¼—3¾	50	3	17
4	52	3¾—3½	18
4½—6	42	4	20
1½	1	4½	21

In lots of a carload or more, above discounts subject to preferential of two 5% discounts on steel and 10% on charcoal iron.

Lapwelded steel: Under 10,000 lbs., 6 pts. under base and one 5%; on 10,000 lbs. to carload, 4 pts. under base and two 5%. Quantity discounts same as for hot-rolled. Charcoal iron: Under 10,000 lbs., 2 pts. under base; on 10,000 lbs. to carload, base and one 5%.

SEAMLESS BOILER TUBES

Cold Drawn			
2—2¼	27	3¼—3½	41
2½—2¾	34	4	46
3	38	4½, 5, 6	43

(On 1—1¾-inch sizes mechanical tubing dis. apply.)

Hot Rolled			
2—2¼	33	3¼—3½	47
2½—2¾	40	4	49
3	44	4½, 5, 6	42

Quantity discounts: Under 10,000 lbs., 10 pts. and 5%; 10,000 to 24,999 lbs., 6 pts. and 5%; 25,000 lbs to carload, 2 pts. and 5 and 5%; carload and over, base discount and 5 and 5%. No extra for lengths 24 ft. and under.

Seamless Tubing □

Cold drawn; f.o.b. mill disc.

100 ft. or 150 lbs.	32%
15,000 ft. or 22,500 lbs.	70%

Cast Iron Water Pipe □

Class B Pipe—Per Net Ton

6-in. & over, Birm.	$36.00-37.00
4-in., Birm.	39.00-40.00
4-in., Chicago	47.00-48.00
6 to 24-in., Chicago	44.00-45.00
6-in. & over, east. fdy.	40.00
Do., 4-in.	43.00

Class A pipe $3 over Class B. Stnd. fitgs., Birm. base....$90.00

Six to 24-inch, fittings, base; over 24-inch plus $20; 4-inch, plus $10; 3-inch, plus $20; gas pipe fittings, 5 higher.

Semifinished Steel □

Prices Per Gross Ton

BILLETS AND BLOOMS
4 x 4 inch base

Pitts., Chi., Cleve., open-hth. & bess.	$26.00
Philadelphia	31.30
Forging, Pitts., Chi.	31.00

SHEET BARS

Pitts., Cleve., Yong.	26.00
Chicago	26.00
Canton, O.	26.00

SLABS

Pitts., Cleve., Yong.	26.00

WIRE RODS

Pitts., Cleveland	36.00
Chicago	37.00

SKELP

All grades, Pitts. and Chicago	1.60c

Coke □ □ □

Price Per Net Ton

BEEHIVE OVENS

Connellsville fur.	$3.50
Connellsville fdry.	4.25
Connel. prem. fdry.	5.00- 5.25
New River fdry.	6.00
Wise county fdry.	4.25-5.00
Wise county fur.	3.50- 4.25

BY-PRODUCT FOUNDRY

Newark, N. J., del.	8.71- 9.31
Chi. ov., outside del.	8.50
Chicago, del.	9.25
New England, del.	10.50
St. Louis, del.	9.25
Birmingham, ovens	5.00
Indianapolis, del.	8.75
Ashland, Ky., Connellsville basis	6.00
Portsmouth, ovens, Connellsville basis	6.00
Buffalo, ovens	7.50- 8.00
Detroit, ovens	8.00
Philadelphia, del.	9.00

Coke By-Products □

Per gallon, producers' plants.

Tank lots

	Spot
*Pure benzol	$0.205
*90 per cent benzol	$0.205
Toluol	0.30
Solvent naphtha	0.26
Commercial xylol	0.26

Per lb. f.o.b. New York

Phenol, (200 lb. drums)	0.163c
Do., (100 lb.)	0.173c

Per lb., producers' plants

Naphthalene flakes and balls	6.00- 7.25

Per 100 lb. Atlantic seaboard

Sulphate of ammonia	$1.25

Pig Iron

Delivered prices do not include switching charges except as noted. No 2 foundry iron is 1.75-2.25 silicon; 25-cent differentials apply for each 0.25 silicon above 2.25

Gross Tons

	No. 2 Fdry.	Malleable	Basic	Bessemer
Basing Points:				
Bethlehem, Pa.	$18.50	$19.00	$18.00	$19.50
Birdsboro, Pa.	18.50	19.00	18.00	19.50
Swedeland, Pa.	18.50	19.00	18.00	19.50
Sparrows Point, Md.	18.50	.....	18.00	.....
From Swedeland, Pa., del. to Phila.	19.26	19.76	18.76	.....
From Bethlehem, del. to Brooklyn	20.77	21.27	.....	.....
From Bethlehem, del. to Newark, N. J.	19.99	20.39	.....	.....
Basing Point:				
Everett, Mass.	18.50	19.00	18.00	19.50
From Everett, del. to Boston	19.00	19.50	18.50	20.00
Basing Point:				
Buffalo	17.50	18.00	16.50	18.50
From Buffalo, del. to Boston	19.00	19.50	18.50	20.00
Basing Points:				
Neville Island, Pa.	18.00	18.00	17.50	18.50
Sharpsville, Pa.	17.50	17.50	17.00	18.00
Youngstown, O.	17.50	17.50	17.00	18.00
From Neville Island, Pa., del. to Pittsburgh district	(Neville Island base, plus 63c to $1.13 switching charges)			
Basing Points:				
Erie, Pa.	17.50	18.00	17.00	18.50
Cleveland	17.50	17.50	17.00	18.00
Toledo, O.	17.50	17.50	17.00	18.00
Detroit	17.50	17.50	17.00	18.00
From Detroit, del. to Saginaw, Mich.	19.60	19.60	19.10	20.10
From Cleveland, del. to Akron, Canton, O.	18.76	18.76	18.26	19.26
From Toledo, del. to Mansfield, O.	19.26	19.26	18.76	19.76
Basing Point:				
Hamilton, O.	17.50	17.50	17.00	18.00
From Hamilton, del. to Cincinnati	18.51	18.51	18.01	19.01
Do., del. to Indianapolis	19.77	19.77	19.27	20.27
Basing Points:				
Duluth	18.00	18.00	.....	18.50
Chicago	17.50	17.50	17.00	18.00
Granite City, Ill.	17.50	18.00	17.00	.....
From Duluth, del. to St. Paul	19.94	19.94	.....	20.44
From Chicago, del. to Milwaukee	18.50	18.50	18.00	19.00
From Chicago, Toledo or Detroit, del. to Muskegon, Mich.	20.40	20.40	19.90	20.90
From Granite City, del. to St. Louis	18.00	18.50	17.50	.....
Basing Point:				
†Birmingham, Ala	13.50	.....	12.50	.....
From Birmingham, del. to:				
Boston	18.62	.....	18.12	.....
Newark, N. J.	19.58	.....	.....	.....
Brooklyn, N. Y.	20.39	.....	.....	.....
Baltimore	19.02	.....	18.52	.....
Philadelphia	18.88	.....	18.38	.....
Cleveland	19.64	.....	18.64	.....
Cincinnati	18.13	.....	17.13	.....
Chicago	18.16	.....	19.14	.....
St. Louis	17.62	.....	17.50	.....

†Southern delivery only. Prices at northern points are adjusted to quotations on northern iron.

Basing Point:	
Provo, Utah	16.50

LOW PHOS.

Basing points: Birdsboro, Pa., Steelton, Pa., and Standish, N. Y.—$23.00. Basing point: Johnson City, Tenn.—$23.00

Philadelphia, standard and copper bearing 24.13

GRAY FORGE		CHARCOAL	
Valley furnace	17.25	Lake Superior fur.	20.50
Pitts. dist. fur.	17.75	Do., del. Chicago	23.54

SILVERY

Jackson County, O., base; 6%—$22.25; 7—$23.25; 8—$24.25; 9—$25.25; 10—$26.25; 11—$27.75.

BESSEMER FERROSILICON

Jackson County, O., base; 10%—$27.25; 11—$28.75; 12—$30.25; 13—$31.75; 14—$33.25; 15—$34.75; 16—$36.25.

Iron Ore

LAKE SUPERIOR ORE

Gross ton, 51½% Lower Lake Ports

Old range bess.	$4.30
Mesabi bessemer	4.65
Old range nonbess.	4.65
Mesabi nonbess.	4.50
High phosphorus	4.40

EASTERN LOCAL ORES

Cents, unit, del. E. Pa.

Foundry and basic, 56-63% con. (nom.)	8.00- 9.00
Cop.-free low phos. 58-65% (nom.)	10.00-10.50

FOREIGN ORE

Cents per unit, f.a.s. Atlantic ports Anom.Q

Foreign manganiferous ore, 45-55% iron, 6-10% man.	10.00
No. Afr. low phos.	9.50
Swedish basic, 65%	9.00
Swedish low phos	9.50
Snapish No. Africa basic, 50 to 60%	9.00
Tungsten, spot, sh. ton unit, duty pd.	$14.00-14.25
N. F. fdy., 55%	7.00
Chrome ore 48% gross ton, c.i.f.	$18.00

Manganese Ore

(Nominal)

Prices, not including duty, cents per unit, cargo lots.

*Caucasian, 52-55%	24.00
*So. African, 52%	24.00
*So. Afr., 49-51%	22.00
Indian, 58-50%	nominal
Indian, 48-50%	nominal

Refractories

FIRE CLAY BRICK

Per 1000 f.o.b. Works

First Quality

Pa., Ohio, Ill., Ky., Md., Ga., Mo.	$45.00
Alabama	48.00

Second Quality

Pa., Ohio, Ill., Ky., Md.. Mo., Ga., Ala.	40.00

MALLEABLE BUNG BRICK

All bases	50.00

SILICA BRICK

Pennsylvania	$45.00
Joliet, E. Chicago	54.00
*Birmingham, Ala.	52.00

MAGNESITE BRICK

Dead burned grain, Chester, Pa., Baltimore bases, net	40.00
Domes, Chewelah, Wash., base	22.00

Fluorspar

85 and 5 per cent grade

Washed gravel, duey paid, tide, gross ton	$21.00
Washed gravel, f.o.b. Ill., Ky., net ton, carloads	$14.75-15.00

Ferroalloys

(In dollars, except Ferrochrome)

Ferromanganese, 78-82% tidewater, duty paid	85.00
del. Pittsburgh	90.24
Spiegeleisen, 19-20%, dom., fur., spot†	26.00
Ferrosilicon, 50%, freight all., cl.	77.50
Do., less carload	85.00
Do., 75 per cent	126-130.00
Spot, $5 a ton higher.	
Silicomang., 2½ carb.	90.00
2% carbon	95.00
1% carbon	105.00
Ferrochrome, 66-70 chromium, 4-6 carbon, cts. lb. con. del.	10.00
Do., spot del.	10.00
Ferrotungsten, stand., lb. cont.	1.16- 1.25
Ferrovanadium, 35 to 40%, lb. cont., on analysis	2.70- 2.90
Ferrotitanium, c. l., prod. plant, frt. allow., net ton	137.50
Spot, 1 ton, frt. all., lb.	7.00
Do., under 1 ton	7.50
Ferrophosphorus, per ton, c. l., 17-19%, Rockdale, Tenn., basis; 18%, $2 unitage	50.00
Ferrophosphorus, electrolytic, per ton c. l., 23-26% f.o.b Anniston, Ala., 24% $2.75 unitage	65.00
Ferromolybdenum, stand, 50-60%, lb.	0.95
Molybdate, lb. cont.	0.80

†Carloads. Quan. diff. apply.

Nonferrous Mill Products

F.o.b. mill base, cents per lb. except as specified. Copper, brass products based on 8.25c Conn. copper

Sheets	
Yellow brass (high	13.75
Copper, hot rolled	15.00
Lead, cut, to jobbers	7.75
Zinc, 100-lb. base	9.00
Tubes and Pipes	
High yellow brass	16.25
Seamless copper	16.25
Rods	
High yellow brass	12.25
Copper, hot rolled	12.25
Anodes	
Copper, untrimmed	12.75
Wire	
Yellow brass (high)	14.25

Old Metals

Deal. buying prices, cents lb.

No. 1 Composition Red Brass	
*New York	4.50- 4.75
Chicago	4.50- 5.00
Cleveland	5.00- 5.25
St. Louis	4.50- 4.75
Heavy Copper and Wire	
*New York	6.12½- 6.25
*Chicago, No. 1	6.25- 6.50
Cleveland	5.50- 5.75
St. Louis	5.50- 5.75
Composition Brass Borings	
*New York	4.25- 4.50
Light Copper	
*New York	5.25- 5.50
*Chicago	5.00- 5.25
Cleveland	5.00- 5.25
St. Louis	4.50- 4.75
Light Brass	
*Chicago	3.00- 3.12½
*Cleveland	3.00- 3.25
Lead	
New York	3.00- 3.25
Cleveland	2.75- 2.10
Chicago	2.75- 3.00
St. Louis	3.10- 3.25
Zinc	
New York	2.25- 2.50
*Cleveland	2.25
Chicago	2.00- 2.25
St. Louis	2.25- 2.50
Aluminum	
*Clips, soft, Cleve.	13.50-14.00
Borings, Cleveland	5.50- 6.50
*Mixed, cast Cleve.	9.50-10.00
Mixed, cast, St. L.	8.00- 8.50

Secondary Metals

Brass ingot, 85-5-5-5	8.25
*Remelt Al., No. 12	13.00-13.50

Iron and Steel Scrap Prices

Corrected to Friday night. Gross tons delivered to consumers, except where otherwise stated

HEAVY MELTING STEEL

Birmingham	9.50-10.50
Boston, dealers	6.75- 7.25
Buffalo, No. 1	10.50-11.00
Buffalo, No. 2	9.00- 9.50
Chicago	10.50-11.00
Cleveland, No. 1	10.25-10.75
Cleveland, No. 2	9.75-10.25
Detroit, No. 1	9.00- 9.50
Detroit, No. 2	8.00- 8.50
Eastern Pa.	11.50-12.00
Eastern Pa., No. 2	9.50
Federal, Ill.	8.75- 9.25
Granite City, Ill.	9.00- 9.50
N. Y., deal. R. R.	8.75- 9.00
N. Y., deal. No. 2	7.50- 8.00
Pittsburgh, No. 1	13.25-13.75
St. Louis, No. 1 del.	10.00-10.50
Valleys, No. 1	13.00-13.50

COMPRESSED SHEETS

Buffalo, dealers	9.00- 9.50
Chicago, factory	9.25- 9.75
Cleveland	9.50-10.00
Detroit	8.50- 9.00
E. Pa., new mat.	10.50
Pittsburgh	13.00-13.50
Valleys	12.50-13.00

BUNDLED SHEETS

Buffalo	6.00- 6.50
Cincinnati, del.	5.75- 6.25
Cleveland	6.75- 7.25
Pittsburgh	11.00-11.50
St. Louis	5.75- 6.25

SHEET CLIPPINGS LOOSE

Chicago	5.50- 6.00
Cincinnati	5.00- 5.50
Detroit	6.00- 6.50
St. Louis	4.50- 5.00

STEEL RAILS, SHORT

Birmingham	11.50-12.50
Boston, dealers	6.50- 6.75
Buffalo	12.00-13.00
Chicago (3 ft.)	12.00-12.50
Chicago (2 ft.)	13.00-13.50
Cincinnati, del.	11.00-11.50
Detroit	10.50-11.00
Pitts., (open-hearth 3 ft. and less)	15.00-15.50
St. Louis	12.00-12.50

STOVE PLATE

Birmingham	6.50- 7.50
Boston, dealers	4.75- 5.00
Buffalo	9.00- 9.50
Chicago, net	7.50- 8.00
Cincinnati, dealers	6.00- 6.50
Detroit, net	5.50- 6.00
Eastern Pa.	8.50- 9.00
N. Y., deal. fdry.	5.50- 6.00
St. Louis	6.50- 7.00

COUPLERS, SPRINGS

Buffalo	11.50-12.00
Chicago, springs	11.50-12.00
Eastern Pa.	14.00-15.00
Pittsburgh	15.00-15.50
St. Louis	10.50-11.00

ANGLE BARS—STEEL

Chicago	11.50-12.00
St. Louis	10.00-10.50

LOW PHOSPHORUS

Buffalo, billets and bloom crops	11.50-12.50
Cleveland, billet, bloom crops	12.50-13.50
Eastern Pa. crops	14.00-14.50
Pittsburgh, billet, bloom crops	16.00-16.50
Pittsburgh, sheet bar crops	16.00-16.50

FROGS, SWITCHES

Chicago	10.50-11.00
St. Louis	10.00-10.50

SHOVELING STEEL

Chicago	10.50-11.00
St. Louis	8.25- 8.75

RAILROAD WROUGHT

Birmingham	7.00- 8.00
Boston, dealers	5.00- 5.50
Buffalo, No. 1	8.00- 8.50
Buffalo, No. 2	10.50-11.00
Chicago, No. 1, net	9.00- 9.50
Chicago, No. 2	10.50-11.00
Cincinnati, No. 2	8.50- 9.00
Eastern Pa.	12.50-13.00
N. Y., No. 1 deal	8.00- 8.50
St. Louis, No. 1	7.00- 7.50
St. Louis, No. 2	8.75- 9.25

SPECIFICATION PIPE

Boston	4.50- 4.75
Eastern Pa.	10.00
New York, dealers	5.25- 5.50

BUSHELING

Buffalo, No. 1	9.00- 9.50
Chicago, No. 1	9.00- 9.50
Cinci., No. 1 deal	6.00- 6.50
Cincinnati, No. 2	2.50- 3.00
Cleveland, No. 2	8.00- 8.50
Detroit, No. 1 new	8.00- 8.50
St. Louis, No. 1	6.50- 7.00
Valleys, new No. 1	12.00-12.50

MACHINE TURNINGS

Birmingham	4.50- 5.00
Boston, dealers	3.00- 3.25
Buffalo	6.50- 7.00
Chicago	6.00- 6.50
Cincinnati, dealers	4.75- 5.25
Cleveland	7.75- 8.25
Detroit	6.00- 6.50
Eastern Pa.	7.00- 7.50
New York, dealers	3.25- 3.50
Pittsburgh	9.50-10.00
St. Louis	4.25- 4.75
Valleys	10.00-10.50

BORINGS AND TURNINGS

For Blast Furnace Use

Boston, dealers	1.75- 2.00
Buffalo	7.25- 7.75
Cincinnati, dealers	4.75- 5.25
Cleveland	8.00- 8.50
Detroit	7.00- 7.50
Eastern Pa.	6.00- 6.50
New York, dealers	2.00- 2.50
Pittsburgh	7.75- 8.25

CAST IRON BORINGS

Birming., plain	4.00- 4.50
Boston, chemical	8.50- 9.00
Boston, dealers	3.25- 3.50
Buffalo	7.25- 7.75
Chicago	6.50- 7.00
Cincinnati, dealers	4.75- 5.25
Cleveland	8.00- 8.50
Detroit	7.00- 7.50
E. Pa., chemical	12.00-15.00
New York, dealers	3.00- 3.50
Pittsburgh	7.75- 8.25
St. Louis	4.00- 4.50

PIPE AND FLUES

Cincinnati, dealers	4.00- 4.50

RAILROAD GRATE BARS

Buffalo	6.00- 6.50
Chicago, net	7.00- 7.50
Cincinnati	5.25- 5.75
Eastern Pa.	8.50- 9.00
New York, dealers	5.00- 5.50
St. Louis	5.50- 6.00

FORGE FLASHINGS

Boston, dealers	4.50- 5.00
Buffalo	8.50- 9.00
Cleve., over 10 in.	8.50- 9.00
Detroit	7.50- 8.00

FORGE SCRAP

Boston, dealers	4.50- 5.00
Chicago, heavy	11.00-11.50
Eastern Pa.	10.50-11.00

ARCH BARS, TRANSOMS

St. Louis	9.75-10.25

AXLE TURNINGS

Boston, dealers	3.50- 3.75
Buffalo	7.50- 8.00
Chicago, elec. fur.	9.00- 9.50
Cleveland	9.00- 9.50
Eastern Pa.	11.00
St. Louis	5.00- 5.50

STEEL CAR AXLES

Birmingham	11.00-11.50
Boston, ship. point.	8.00- 8.50
Buffalo	10.00-11.00
Chicago, net	10.50-11.00
Eastern Pa.	14.00
St. Louis	11.50-12.00

SHAFTING

Boston, ship. point.	10.25-10.50
Eastern Pa.	15.50
New York, dealers	11.00-11.50
St. Louis	9.00- 9.50

CAR WHEELS

Birmingham, iron	9.00-10.00
Boston, iron deal.	6.00- 6.50
Buffalo, iron	9.00- 9.50
Buffalo, steel	11.00-12.00
Chicago, iron	10.50-11.00
Chicago, rolled steel	11.50-12.00
Cincinnati, iron	8.25- 8.75
Eastern Pa., iron	12.00-12.50
Eastern Pa., steel	14.00-15.00
Pittsburgh, iron	11.50-12.00
Pittsburgh, steel	15.00-15.50
St. Louis, iron	8.75- 9.25
St. Louis, steel	11.00-11.50

NO. 1 CAST SCRAP

Birmingham	9.00-10.00
Boston, No. 2	5.50- 5.75
Boston, tex. con.	10.50-11.00
Buffalo, cupola	10.00-11.00
Buffalo mach.	11.00-12.00
Chicago, agri. net	8.00- 8.50
Chicago, mach. net	9.00-10.00
Chi., railroad net	8.50- 9.00
Cinci., mach. cup	9.00- 9.50
Cleveland, cupola	10.50-11.00
Detroit, net	8.75- 9.25
Eastern Pa., cupola	11.50-12.50
Pittsburgh, cupola	12.50-13.00
San Francisco, del.	13.50-14.00
Seattle	7.00- 8.50
St. Louis, No. 1	8.25- 8.75
St. L., No. 1 mach.	8.75- 9.25

HEAVY CAST

Boston, del.	6.25- 6.50
Buffalo, break.	7.50- 8.00
Cleveland, break.	8.00- 8.50
Detroit, break	7.00- 7.50
Detroit, auto net	9.50-10.00
Eastern Pa.	11.00-11.50
N. Y., No. 1, deal	7.25- 7.75
N. Y., break deal	7.25- 7.75
Pittsburgh	11.50-12.00

MALLEABLE

Boston, consum.	12.00-12.25
Buffalo	11.00-11.50
Chicago, R. R.	11.50-12.00
Cinci., agri. del.	8.00- 8.50
Cinci., R. R. del.	8.50- 9.00
Cleveland, rail	11.00-11.50
Detroit, auto	8.50- 9.00
St. Louis, R. R.	9.00- 9.50
Eastern Pa., R. R.	11.50-12.50

RAILS FOR ROLLING

5 feet and over

Birmingham	11.00-11.50
Boston, dealers	7.25- 7.50
Buffalo	9.25- 9.75
Chicago	11.50-12.00
Eastern Pa.	12.50
New York, dealer	7.00- 7.50
St. Louis	10.75-11.25

LOCOMOTIVE TIRES

Chicago (cut)	11.00-11.50
St. Louis, No. 1	8.75- 9.25

LOW PHOS. PUNCHINGS

Buffalo	11.00-11.50
Chicago	12.50-13.00
Eastern Pa.	14.00-15.00
Pittsburgh	15.00-15.50

Nonferrous Metal Prices of the Week

Spot unless otherwise specified. Cents per pound

	Copper: Electro., del. Conn.	Copper: Lake, del. Midwest	Copper: Casting, refinery	Straits Tin: New York Spot	Straits Tin: New York Futures	Lead: New York	Lead: East St. L.	Zinc: St. L.	Aluminum 98-99%	Antimony Spot, N. Y.	Ingot Nickel
Jan. 20	8.37½	8.62½	8.12½	51.70	51.90	4.00	3.90	4.25	*22.90	7.20	35.00
Jan. 22	8.37½	8.62½	8.12½	51.55	51.80	4.00	3.90	4.25	*22.90	7.20	35.00
Jan. 23	8.37½	8.62½	8.12½	51.50	51.75	4.00	3.90	4.25	*22.90	7.20	35.00
Jan. 24	8.25	8.62½	8.00	51.30	51.55	4.00	3.90	4.25	*22.90	7.15	35.00
Jan. 25	8.25	8.37½	8.00	51.00	51.25	4.00	3.90	4.25	*22.90	7.15	35.00
Jan. 26	8.25	8.37½	8.00	50.75	51.00	4.00	3.90	4.25	*22.90	7.15	35.00

*Nominal quotation. Market range 19.90c to 22.90c

Warehouse Iron and Steel Prices

Cents per pound for delivery within metropolitan districts of cities specified

STEEL BARS	
Baltimore* ..	2.75c
Boston††	2.90c
Buffalo	2.95c
Chattanooga..	3.26c
Chicago	2.90c
Cincinnati	3.10c
Cleveland	2.90c
Detroit	2.98½c
Houston	3.00c
Los Angeles..	3.40c
New Orleans	3.00c
New York‡(d)	3.17c
Pittsburgh	2.85c
Philadelphia*	2.75c
San Francisco	3.55c
Seattle	3.40c
St. Louis	3.14c
St. Paul	3.00c
Tulsa	3.25c

IRON BARS	
Portland	3.40c
San. Fran.	3.55c
Baltimore*	2.75c
Baltimore* ...	2.60c
Chattanooga..	3.26c
Chicago	2.75c
Cincinnati	3.10c
Detroit	2.98½c
New York‡(d)	3.10c
Philadelphia*	2.75c
St. Louis	3.14c
Tulsa	3.25c

REINFORC. BARS	
Boston 2.75c-3.25c	
Buffalo	1.95c
Chattanooga..	3.26c
Chicago 1.95c-2.10c	
Cleveland (c)	1.97½c
Cincinnati	3.10c
Houston	3.00c
Los Ang., cl...	3.10c
New Orleans	3.00c
New York	3.17c
Philadelphia..	2.62½c
Pitts., plain...	3.00c
Pitts., twisted squares	3.12½c
Seattle	3.50c
St. Louis	3.29c
Tulsa	3.25c
Young. 2.30c-2.60c	

SHAPES	
Baltimore* ...	2.60c
Boston††	3.07c
Buffalo	3.20c
Chattanooga..	3.46c
Chicago	3.10c
Cincinnati	3.30c
Cleveland	3.21c
Detroit	3.30c
Houston	3.00c
Los Angeles..	3.40c
New Orleans	3.50c
New York(d)	3.27c
Philadelphia*	2.75c
Pittsburgh	3.05c
Portland	3.40c
San Francisco	3.50c
Seattle	3.40c
St. Louis	3.34c
St. Paul	3.25c
Tulsa	3.50c

PLATES	
Baltimore*	2.75c
Boston††	3.08c
Buffalo	3.20c
Chattanooga..	3.46c
Chicago	3.10c
Cincinnati	3.30c
Cleveland, ¼ in. and thicker.	3.21c
Cleve., ⅜-in.	3.20c
Detroit	3.30c
Det., ⅜-in.....	3.10c
Houston	3.00c
Los Angeles..	3.40c
New Orleans	3.50c
New York(d)	3.30c
Philadelphia*	2.75c
Phila. floor....	4.35c
Pittsburgh	3.05c
Portland	3.40c
San Fran.	3.50c
Seattle	3.40c
St. Louis	3.34c
St. Paul	3.25c
Tulsa	3.50c

NO. 10 BLUE	
Baltimore* ..	2.95c
Boston††	2.90c
Buffalo	3.10c
Chattanooga..	3.26c
Chicago	2.95c
Cincinnati	3.10c
Cleveland	3.01c
Det., 8-10 ga.	3.03½c
Houston	3.35c
Los Angeles..	3.65c
New Orleans	3.50c
New York	3.17c
Portland	3.65c
Philadelphia*	2.95c
Pittsburgh	2.85c
San Fran.	3.75c
Seattle	3.65c
St. Louis 3.19c-3.36c	
St. Paul	3.45c
Tulsa	3.70c

NO. 24 BLACK	
Baltimore*†..	3.50c
Boston (g) ..	3.75c
Buffalo	3.25c
Chattanooga..	4.01c
Chicago	3.70c
Cincinnati	3.85c
Cleveland	3.76c
Detroit	3.78½c
Los Angeles..	4.15c
New York	3.65c
Philadelphia*†	3.40c
Pittsburgh**..	3.40c
Portland	4.25c
San Fran.	4.25c
Seattle	4.25c
St. Louis	3.94c
St. Paul	3.695c
Tulsa	4.75c

NO. 24 GAL. SHEETS	
Baltimore*†..	3.75c
Buffalo	4.00c
Boston (g) ..	4.35c
Chattanooga..	4.61c
Chicago 4.20c-4.30c	
Cincinnati	4.45c
Cleveland	4.36c
Detroit	4.45c
Houston	3.90c
Los Angeles..	4.75c
New Orleans	4.35c
New York	4.25c
Pitts.** 3.90c-4.20c	
Portland	4.85c
San Fran.	4.85c
Seattle	4.85c
St. Louis	4.54c
St. Paul	4.19c
Tulsa	5.10c
Phila.*†	4.00c

BANDS	
Baltimore	3.05c
Boston††	3.15c
Buffalo	3.30c
Chattanooga..	3.51c
Chicago	3.20c
Cincinnati	3.35c
Cleveland	3.26c
Detroit, ⅜-in. and lighter	3.28½c
Houston	3.25c
Los Angeles..	3.80c
New Orleans	3.20c
New York(d)	3.42c
Philadelphia..	3.05c
Pittsburgh	3.10c
Portland	3.90c
San Fran.	3.15c
Seattle	3.90c
St. Paul	3.20c
Tulsa	3.45c
St. Louis	3.44c

HOOPS	
Baltimore	2.80c
Boston	4.15c
Buffalo	3.55c
Chicago	3.20c
Cincinnati	3.35c
Det., No. 14 and lighter	3.28½c
New York	3.42c
Philadelphia..	3.30c
Pittsburgh	3.75c
Seattle	5.40c
St. Paul	3.75c

COLD FIN. STEEL	
Baltimore (c)	3.71c
Boston 4.00c-4.50c	
Buffalo (h)....	3.55c
Chattanooga*	4.06c
Chicago (h)..	3.50c
Cincinnati	3.70c
Cleveland (h)	3.50c
Detroit	3.63½c
Los Ang.(f)..	5.95c
New Orleans	4.25c
New York...3.92c-4.42c	
Philadelphia..	3.73c
Pittsburgh(h)	3.45c
Portland (f)..	4.75c
San Fran. (f)	5.95c
Seattle (f)....	4.75c
St. Paul	3.20c
St. Louis.....	3.74c
Tulsa	4.65c

COLD ROLL. STRIP	
Boston, 0.100-in., 500 lb. lots	5.20c
Buffalo	5.25c
Chicago (b)..	5.65c
Cincinnati	5.80c
Cleveland (b)	5.55c
Detroit	5.40c
Philadelphia..	4.00c
New York.....	4.55c
St. Louis	5.74c

(b) Net base, straightening, cutting, boxing, 1 ton or more.
(c) Plus mill, size and quantity extras.
(d) Minus quant. diff.
(e) New mill classif.
(f) Rounds only.
(g) 50 bundles or over.
(h) Outside delivery, 10c less.

‡Domestic bars.
*Plus. quan. extras.
**Under 25 bundles.
*†50 or more bundles.
†New extras apply.
††Base 40,000 lbs., extras on less.

Prices at Detroit, Cleveland, Chicago, Pittsburgh, Cincinnati, Chattanooga, New York, Boston, St. Louis on heavier lines are subject to new quantity differentials:

399 pounds and less, up 50 cents; 400 to 9999 pounds, base; 10,000 to 19,999 pounds, 15 cents under; 20,000 to 39,999 pounds, 25 cents under; 40,000 pounds and over, 35 cents under base.

Current Iron and Steel Prices of Europe

Dollars at Rates of Exchange, Jan. 25

Export Prices f. o. b. Ship at Port of Dispatch—By Cable (or Radio)

PIG IRON	British gross tons U. K. ports £ s d	Continental Channel or North Sea ports, metric tons Gold parity, $4.8665 £ s d
Foundry, 2.50-3.00 Silicon.	$14.54 2 18 6	$8.88 1 16 6
Basic bessemer.....	13.42 2 14 0*	7.30 1 10 0
Hematite, Phos. .03-.05....	14.91 3 0 0	....
SEMIFINISHED STEEL		
Billets.....	$27.34 5 10 0	$11.44 2 7 0
Wire rods, No. 5 gage.....	$38.77 7 16 0	21.90 4 10 0
FINISHED STEEL		
Standard rails.....	$38.52 7 15 0	$26.77 5 10 0
Merchant bars.....	1.55c 7 0 0	.69c 3 2 6
Structural shapes.....	1.64c 7 7 6	.63c 2 17 6
Plates, †¼ in. or 5 mm.....	1.78c 8 0 0	.91c 4 2 6
Sheets, black, 24 gage or 0.5 mm.....	2.05c 9 5 0	1.27c 5 15 0
Sheets, gal., 24 gage, corr...	2.50c 11 5 0	1.54c 7 0 0
Bands and strips.....	1.78c 8 0 0	.85c 3 17 6
Plain wire, base.....	2.05c 9 5 0	1.18c 5 7 6
Galvanized wire, base.....	2.44c 11 0 0	1.38c to 1.40c 6 5 6 to 6 7 6
Wire nails, base.....	2.66c 12 0 0	1.27c 5 15 0
Tin plate, box 108 lbs....	$ 4.10 0 16 6	....

British ferromanganese $85 delivered Atlantic seaboard, duty-paid. German ferromanganese £9 0s 0d 4($3.74) f.o.b.

Domestic Prices at Works or Furnace—Last Reported

	£ s d		French Francs		Belgian Francs		Reich Marks	
Fdy. pig iron, Si. 2.5.....	$15.53	3 2 6	(a) $12.46	200	$13.48	305	$23.59	63
Basic bessemer pig iron....	16.15	3 5 0	(a)*11.53	185	12.82	290	26.03	(b) 69.50
Furnace coke.....	4.10	0 16 6	7.48	120	4.86	110	7.21	19.25
Billets.....	27.34	5 10 0	25.23	405	19.45	440	36.14	96.50
Standard rails.....	1.83c	8 5 0	1.96c	700	2.20c	1,100	2.24c	132
Merchant bars.....	1.69c	7 12 6	1.57c	560	1.07c	535	1.87c	110
Structural shapes.....	1.94c	8 15 0	1.54c	550	1.07c	535	1.83c	107.50
Plates, †¼-in. or 5 mm.....	1.89c	8 10 0	1.90c	680	1.35c	675	2.16c	127
Sheets, black.....	2.28c	10 5 0§	2.38c	850‡	1.50c	750‡	2.45c	144‡
Sheets, galv., corr., 24 ga. or 0.5 mm.....	2.83c	12 15 0	4.06c	1,450	3.00c	1,500	6.29c	370
Plain wire.....	2.05c	9 5 0	3.16c	1,130	2.20c	1,100	2.94c	173
Bands and strips.....	2.33c	10 10 0	1.82c	650	1.40c	700	2.16c	127

*Basic. †British ship-plates. Continental, bridge plates. §24 ga. ‡1 to 3 mm. basic price. British quotations are for basic open-hearth steel. Continental usually for basic-bessemer steel. a del. Middlesbrough.

Bars

Bar Prices, Page 42

Pittsburgh—Automotive purchases of bars have not improved greatly and shipments of forging and alloy bars are decidedly slow. Bar prices are holding with merchant bars and small shapes 1.75c, Pittsburgh, alloy bars 2.45c, Pittsburgh, and cold-drawn alloy bars 2.95c, Pittsburgh.

Cleveland—Not much tonnage is developing in heavy finished steel. Bars are more active than plates or shapes, general buying appearing more distributed, but with automotive requirements still slow. Inquiry from agricultural and road building equipment manufacturers has improved, being received here from both eastern and western districts.

Chicago—Improvement in shipments of soft steel bars is retarded by slowness of automotive requirements. Sales and specifications are improving gradually, aided by better demand from miscellaneous consumers. Farm implement manufacturers are operating at a better rate than for some time past and anticipate a larger increase in production later in the year. Soft steel bars are 1.80c, Chicago, 1.70c, Chicago, for rail steel and 1.60c, Terre Haute, Ind., for bar iron.

Boston—Most commercial steel bar orders are small and for immediate delivery. Machinery builders continue to take fair shipments.

New York—Commercial steel bar buying is featureless, with sellers looking to railroads to provide the next important impetus. Prices are unchanged.

Philadelphia — Except for requirements of the Pennsylvania railroad, buying of steel bars is slow and inquiry scarce. Prices are unchanged at 2.04c, Philadelphia.

Universal Steel Co., Bridgeville, Pa., booked 107,370 pounds of annealed tungsten steel for the Frankford arsenal, Pa., at 15.00c, delivered.

Plates

Plate Prices, Page 42

Pittsburgh—Failure of car building programs to go to award has held up a heavy car plate tonnage, and the market also is in other directions. Municipal work is the most active in tank requirements. A large part of 1173 tons for a Pennsylvania state bridge, Feb. 9, to be built between Lehigh and Northampton counties, will be plates, as the job is to be a 9-span plate girder bridge. Plates hold firmly at 1.70c, Pittsburgh.

Cleveland — Approximately 700 tons of ¼-inch plates will be fabricated here for tunnel liners for the Piney river sanitation project in Washington, part of the tonnage having been placed. Distributed throughout the state of Ohio are eight or nine water tank projects, requiring an average of about 100 tons of plates, awaiting final action by PWA. The general contract for Cleveland's southerly sewage plant, long in abeyance, is to be awarded this week, releasing 1000 tons of plates for tanks.

Chicago—Railroads offer the best prospect for an increase in plate demand. Activity recently has been confined to miscellaneous uses. Repair programs of railroads have progressed insufficiently to be reflected in any material change in plate buying.

Boston—Plate demand in New England is heavier and more varied, including tank work for breweries and distilleries, bridges and heavier requirements from several boiler shops. Some attractive industrial orders have also been taken.

New York—Except some buying by shipyards the plate market shows little change. A feature is continued good buying for enameled tanks.

Philadelphia—In an otherwise dull market, the 6200 tons of plates pending for the Pennsylvania is prominent. Eastern plate mills are operating at a lighter rate.

Contracts Placed

5280 tons, armor plate, navy department, Washington, divided between Midvale Co., Nicetown, Pa., Bethlehem Steel Co., Bethlehem, Pa., Carnegie Steel Co., Pittsburgh.

700 tons, tunnel liners for Piney river sewer system, Washington, to Truscon Steel Co., Youngstown, O., to be fabricated in Cleveland.

500 tons, sewer tunnel liner plates through M. A. Cardo Engineering Corp., New York, to Truscon Steel Co., Youngstown, O.

180 tons, armor plate, bureau of ordnance, navy department, Washington, to Midvale Co., Philadelphia; bids Dec. 5, at $612 and $512 a ton.

150 tons, water storage tank, Lexington, Mass., to McClintic-Marshall Corp., Bethlehem, Pa.; bids Jan. 16.

130 tons, storage tanks, Sinclair Refining Co., Wellsville, N. Y., to Chicago Bridge & Iron Works, Chicago.

100 tons, 200,000-gallon water tank, Reeds Ferry, Merrimack, N. H., to Chicago Bridge & Iron Works, Chicago; Davison Construction Co., Manchester, N. H., general contractor.

100 tons, gasoline storage system, Hamilton Field, California; general contract to Bennett & Taylor, Los Angeles.

100 tons, tunnel liner plates Casper-Alcova project for bureau of reclamation, Denver, to Truscon Steel Co., Youngstown, O.

Contracts Pending

1164 tons, including structural, Seattle seawall improvement; bids Jan. 30.

900 tons, two siphons for Owyhee, Oregon, reclamation project; bids in.

200 tons, two 200-horsepower boilers for Mare Island, Calif.; Alta Electric & Mechanical Co., San Francisco, low on general contract.

200 tons, for two barges 7 x 30 x 50 feet, for United States engineer, Vicksburg, Miss., bids Feb. 11.

200 tons, water storage tank, Kaukauna, Wis.; Pittsburgh-Des Moines Steel Co., Pittsburgh, low.

100 tons, water tank, prison colony, Norfolk, Mass.; Pittsburgh - Des Moines Steel Co., Pittsburgh, low.

100 tons, shapes and plates, 300,000-gallon elevated water tank, Hartsville, S. C.; bids Feb. 1.

100 tons, water tower at East Greenville, Pa.; Chicago Bridge & Iron Works, Chicago, low.

Unstated tonnage, 200,000-gallon steel elevated steel tank, Madison, Fla.

Sheets

Sheet Prices, Page 42

Pittsburgh—Automotive sheet buying is heavier. One leading automobile company is understood to have bought 10,000 tons of hot-rolled, single pickled sheets recently. Sheet mill operations generally now are close to 40 per cent. According to present indications an advance of $3 to $5 a ton in sheets may be announced shortly.

Cleveland—Automotive sheet tonnage continues to lead demand for finished steel, mill operations being sustained by further releases from General Motors, Chrysler and Ford. Refrigerator interests, expecting to buy soon, estimate their steel requirements this year will be 30 to 40 per cent over 1933. Republic Steel Corp. has been awarded 300 tons of No. 24, 30 x 85-inch, pickled and oiled sheets for Ohio automobile license plates, at 2.81c, net, delivered at Columbus, in February and March. This price is reported to have been submitted by all bidders.

Chicago—Advances of $3 to $5 a ton in sheet prices appear definitely in prospect on second quarter business. Such increases would compensate for the sharp declines experienced over the past several years and would serve to bring quotations back to about the levels of 1931. Demand is holding well with automotive orders outstanding.

Boston—Gradual improvement is noted in New England, with indications of heavier buying and shipments to railroads for repairs.

New York — Truscon Steel Co.,

Youngstown, O., has booked 25 all-steel service station buildings and equipment for various points, taking a substantial tonnage of sheets and other material.

Miscellaneous sheet buying has improved somewhat, with increasing rumors of impending price advances.

Philadelphia—An early advance in sheet prices is expected in the trade here. Sellers generally, however, hesitate to urge buyers to cover until indications become more definite. Expecting a shortage in wide sheets for automobile builders three producers, including one eastern mill are reported to be planning to expand facilities. It also is understood one eastern producer will install a continuous strip mill.

Cincinnati—Sheet mills in this district are expanding production to provide for increased demand from the automotive industry.

St. Louis—Further moderate expansion in demand for sheets is noted in this area. This is due chiefly to larger orders by miscellaneous users.

Railroads

Track Material Prices, Page 43

Producers of major rolled steel products are delaying bids on requirements of the Pennsylvania, due Feb. 5, pending determination as to whether to quote delivered prices, using commercial freight rates, or to quote under resolution No. 29, which deals specifically with steel for railroad account. An early decision by the American Iron and Steel institute is expected.

The question arises because outside trustees are named, it is said, as owners under the plan for financing, with the Pennsylvania acting in effect as purchasing agent only. This does not interfere with making a Clayton act opening, it is pointed out. A somewhat similar question has arisen with regard to resolution No. 29 in connection with purchases by a railroad of steel for shipment to a non-railroad shop for fabrication.

Tonnages for the Pennsylvania to be bid Feb. 5 are more completely tabulated at 7000 tons of shapes, 6200 tons of plates, 4150 tons of center sills and 3600 tons of No. 10 gage sheets. No reference is made to extra wide sheets tentatively considered. Bar requirements are 1400 tons. Wheel requirements total 18,000 and axles 3000. Bids will be opened Jan. 29 by the Pennsylvania on 2000 tons of rivets and an unstated tonnage of bolts and nuts, for delivery through the year.

New York Central will ask bids in about two weeks on over 10,000 tons miscellaneous steel, originally up Jan. 16 under Clayton act.

Releases on steel rail contracts are delayed and mills are idle for most part. Boston & Albany will open bids Feb. 5 on 735 tons of tie plates and 100 tons of spikes. Santa Fe has placed an order with the Safety Car Heating & Lighting Co., New York, for air conditioning equipment for 26 passenger cars, for installation at its own shops.

Awards are expected this week on the Van Sweringen lines' inquiries for 12,775 freight cars. Bids were received from more than 16 carbuilders on unit cars and also on parts and work in tabulating them has delayed the purchases.

Submission of bids on several car lists the past few days, including considerable equipment for the Chesapeake & Ohio and Nickel Plate, is regarded by the trade as indicating the essential features of the car builders' code are virtually settled at Washington.

Colorado Fuel & Iron Co., Denver, has booked 8400 tons of rails and fastenings for Houston, Tex.

Car Orders Placed

John Morell & Co. Inc., Ottumwa, Iowa, 150 refrigerator cars, to General American Transportation Corp., Chicago.

Rail Orders Placed

Houston, Tex., 8400 tons rails and fastenings, to Colorado Fuel & Iron Co., Denver.

Pipe

Pipe Prices, Page 43

Pittsburgh—Market on standard pipe is continuing at about the December rate. This being the off season for line pipe, no activity is noticeable in that market. Largest pending project is the 4000-ton inquiry from Kansas City, Mo., which army engineers close on Feb. 2.

Boston—Largest prospective cast pipe inquiry is approximately 7500 tons, 48-inch cast pipe for New Bedford, Mass., on which bids will be taken soon. At 4.081c, delivered, Edgar T. Ward's Sons Co., Boston, booked a small volume of cold drawn steel tubing for the Springfield armory.

Chicago — Practically all larger pipe projects in this district remain pending, due to delays in approval of loans or specifications. Shipments are being made for Chicago sanitary district work against orders placed more than a year ago but bids on additional requirements will not be asked for several weeks.

New York—Japanese producers were awarded approximately 25,000 tons of 48-inch cast pipe for Mexico City, Mexico, in competition with American, British, French and German makers. Porto Rico will take bids soon on 6000 tons of cast pipe. Miami, Fla., has awarded 8000 tons.

Cast Pipe Placed

25,000 tons, 48-inch, Mexico City, Mexico, to Japanese interests. American, British, French and German makers competed.

8000 tons, 30 to 36-inch, Miami, Fla., to United States Pipe & Foundry Co., Burlington, N. J.

115 tons, 10-inch and under, Reeds ferry, Merrimack, N. H., to United States Pipe & Foundry Co., Burlington, N. J.; Davidson Construction Co., Manchester, N. H., general contractor.

Cast Pipe Pending

7500 tons, 48-inch, New Bedford, Mass., to replace about four miles of 36-inch; federal loan approved.

6000 tons, 4 to 14-inch, Porto Rico; bids Jan. 30.

1280 tons, 8 to 20-inch, Amarillo, Tex.; federal loan approved.

384 tons, 8 to 12-inch, class 150, Fresno, Calif.; bids Jan. 25.

354 tons, 16-inch, class 200, Glenwood Springs, Colo.; PWA has granted funds.

350 tons, Great Barrington, Mass.; bids Feb. 1.

285 tons, 6 and 8-inch, Trenton, Fla., also fittings and 30,000-gallon tank.

265 tons, 16-inch, class 250, Glendale, Calif.; bids Jan. 25.

262 tons, 12-inch, class 150, Hayward, Calif.; American Cast Iron Pipe Co., Birmingham, Ala., low.

200 tons, 2-inch, Los Angeles; Pacific States Cast Iron Pipe Co., Provo, Utah, low.

135 tons, 6 and 10-inch, Madison, Fla.

100 tons, 4 and 8-inch, class C, Daly City, Calif.; bids Jan. 29.

Steel Pipe Placed

Unstated tonnage, 18 miles, 6⅝-inch, Eddy County Gas Co., Carlsbad, N. Mex., to Republic Steel Corp., Youngstown, O.

Unstated tonnage, 100 pieces, 30-inch, and 100 pieces, 20-inch, shore pipe for dredges CURRITUCK and HENRY BACON, f.o.b. Charleston, S. C., and Wilmington, N. C., federal engineer opening Jan. 15, to the Novelty Steam Boiler Works Co., Baltimore, $4011.

Cold Finished

Cold Finished Prices, Page 43

Pittsburgh — Heavier buying in cold-finished steel bars is still delayed with every indication that January will be low in specifications and shipments. The automotive trade is slow and most jobbers and miscellaneous manufacturers do not re-

flect activity. Cold-finished steel bars are 2.10c, Pittsburgh.

Warehouse

Warehouse Prices, Page 46

Cleveland—The volume of warehouse business is exceeding that of December. A steadier flow of orders is noted, indicating broadening improvement in manufacturing operations.

Chicago — Warehouse business equals or exceeds that of December, which was unusually active.

New York — Upward trend in warehouse volume continues, well spread through an increase in small orders. One leading jobber is issuing a list directed toward stabilization of prices of wire nails and wire.

Philadelphia — Warehouse buying is quiet but steady, with prices unchanged.

Baltimore—Cold-finished material has been advanced to 3.71c from 3.56c by Baltimore warehouses.

Detroit — Orders for steel products out of warehouse at Detroit continue heavy. Shipments in January have been comparable with those of December. Cold-drawn bars out of stock are now quoted 3.63½c, with nails $2.85, the latter representing an adjustment by jobbers to cover their own cash discount payment.

Cincinnati — Demand for steel from warehouse has been gradually expanding and January volume will exceed that of December.

St. Louis—Steel warehousemen report slow, but steady expansion in sales. Miscellaneous demands lead. The general manufacturing trade shows some betterment.

Semifinished

Semifinished Prices, Page 43

Sheet bars, billets and slabs hold at $26, Pittsburgh. Miscellaneous shipments have been improving slightly. A fair size purchase of bessemer billets from a Valley producer and open-hearth billets from a Pittsburgh mill was made recently by a Detroit buyer.

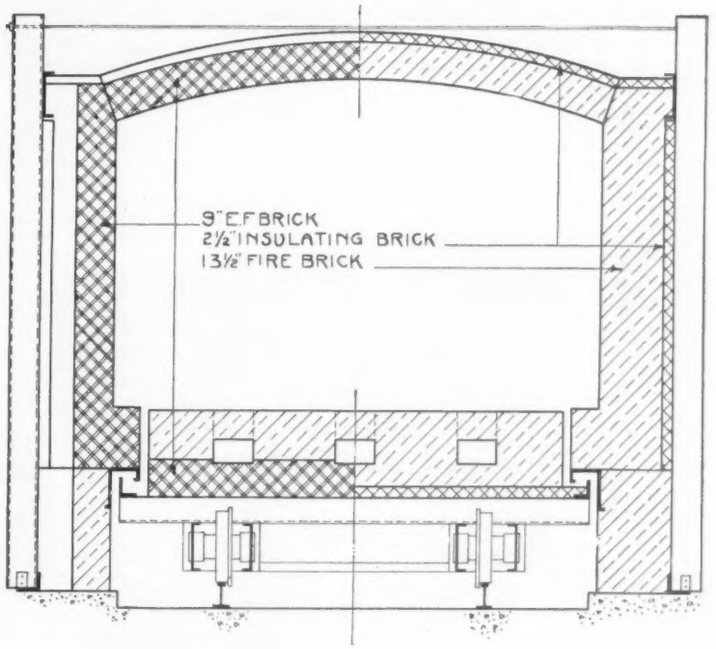
Ferroalloys

Ferroalloy Prices, Page 44

Ferromanganese specifications are moderately active at New York and Pittsburgh. Prices of ferroalloys are unchanged.

Where

WEIGHT COUNTS . . .



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THREE INSULATING BRICK FOR INDUSTRIAL FURNACES

Shapes

Structural Shape Prices, Page 42

Cleveland—On several Ohio state highway projects advertised recently no bids were received because the state engineers' estimates were too low. While the structural shape fabricators' code has not yet been approved, the majority are operating under the President's re-employment agreement, and some under the general provisions of the steel code.

An amendment to the government's regulations respecting federal highway projects, and state jobs where government money is used, approved by Secretary Ickes, forbids the acceptance of any bids involving work or materials not produced under trade codes or the President's agreement.

Pittsburgh — Over 2000 tons of structural shapes are actively pending in inquiry by the Pennsylvania state highway department for six bridges, bids Feb. 9. Plain structural material is firm at 1.70c, base, Pittsburgh.

Chicago—Shapes for the Bellevue, Iowa, river lock, totaling 1100 tons, have been placed, leaving only the unit at Guttenberg, Iowa, on which bids close Jan. 30, yet to be awarded. Recent awards also include 1050 tons for state hospital buildings at Manteno, Ill. New inquiries are out for 1500 tons for highway bridges in Illinois, Mississippi and Nebraska.

Boston — Prospective business is encouraging. Demand is almost entirely for public works.

Philadelphia — Structural shape awards are light, although some substantial tonnages are to be closed soon. Plain material is 1.90½c, Philadelphia.

An application for a permit for a $15,000,000 vehicular tunnel under the Delaware river near here reveals plans for a tube 5900 feet long, outside diameter 44 feet, which will require a large steel tonnage.

Buffalo—Government aid will be sought to build a high level highway bridge over the Buffalo harbor entrance, which would require at least 3000 tons for the main span.

Contracts Placed

2400 tons, bridge, for Louisiana & Arkansas railway at Bonne Carre, La., to McClintic-Marshall Corp., Bethlehem, Pa.

1150 tons, viaduct, Seventh street trafficway over railroads, Kansas City, Kan., to Kansas City Structural Steel Co.; J. A. Tobin Construction Co., Kansas City, Kan., general contractor.

1100 tons, lock No. 12, Bellevue, Iowa, to McClintic-Marshall Corp., Bethlehem, Pa.; James Stewart Corp., New York, general contractor.

1080 tons, three truss spans, Douglas county, Nebraska, to Omaha Steel Works, Omaha, Nebr.

1050 tons, state hospital buildings, Manteno, Ill., to Duffin Iron Co., Chicago.

1000 tons, Fourth avenue south viaduct, Seattle, to Wallace Bridge & Structural Steel Co., Seattle; Sheble Construction Co., Seattle, general contractor.

900 tons, Illinois Central railroad viaduct, Big Clifty, Ky., to McClintic-Marshall Corp., Bethlehem, Pa.

540 tons, three-story addition to *Daily News* building, Brooklyn, N. Y., to Post & McCord Inc., New York; through Hageman & Harris Co.

410 tons, tobacco warehouse, Baltimore, to Dietrich Bros., Baltimore; Morrow Bros., Baltimore, general contractors. Baltimore Steel Co. awarded 56 tons of reinforcing bars.

400 tons, cable towers, Pool Creek, Tenn., to Virginia Bridge & Iron Co., Roanoke, Va.

350 tons, subways, Wisconsin, to Milwaukee Bridge Co., Milwaukee.

330 tons, cavalry buildings, Fort Knox, Kentucky, to Bedford Foundry & Machine Co., Bedford, Ky.

281 tons, underpass, overpass and bridges, Burleson, Dallas, Hansford and Rusk counties, Texas, 170 tons to Virginia Bridge & Iron Co., Roanoke, Va., remainder divided between Petroleum Iron Works, Austin Bros. and Mosher Steel & Machinery Co.; Austin Bridge Co., Dallas, Tex., general contractor.

278 tons, state bridge, Miami county, Ohio, to Ben-Tom Supply Co., Columbus, O.

278 tons, Eel river bridge, Humboldt county, California, for state, to McClintic-Marshall Corp., San Francisco.

277 tons, Eel river bridge, Mendocino county, California, for state, to McClintic-Marshall Corp., San Francisco.

275 tons, bridges over railroad, project 130-A, Auburn, Mass., to McClintic-Marshall Corp., Bethlehem, Pa.; Charles I. Hosmer Inc., Greenfield, Mass., general contractor.

275 tons, towers, department of agriculture, Washington, for delivery to various points, to Aermotor Co., Chicago.

270 tons, bridge No. 601E, Pushmataha county, Oklahoma, to Muskogee Iron Works Inc., Muskogee, Okla.

260 tons, ward building, Gallinger hospital, Washington, to Dietrich Bros., Baltimore; through D. M. W. Construction Co., New York.

250 tons, bridge, Seaboard Airline railroad, Pride, S. C., to McClintic-Marshall Corp., Bethlehem, Pa.

245 tons, highway bridges, Bremer and Howard counties, Iowa, to Clinton Bridge Works, Clinton, Iowa.

210 tons, bridge spans, Missouri Pacific railroad, Selkirk, Kan., to Virginia Bridge & Iron Co., Roanoke, Va.

170 tons, state highway bridge, Foustwell, Pa., to McClintic-Marshall Corp., Bethlehem, Pa.

175 tons, two bridges, on Salt Folk, county road, Pottawatomie county, Oklahoma, to Sherman Machine & Iron Works, Oklahoma City, Okla.

170 tons, bridge No. 601F, Latimer county, Oklahoma, to Illinois Steel Bridge Co., Jacksonville, Ill.

150 tons, beam spans, Sioux county, Iowa, to Des Moines Steel Co., Des moines, Iowa.

145 tons, rebuilding shed, Central wharf, Boston, to New England Structural Co., Everett, Mass.; Waghorne & Brown, general contractors.

140 tons, officers' apartment, Fort Jay, New York, to Belmont Iron Works, Philadelphia; through P. J. Murphy Co.

135 tons, state highway bridge, Potter county, Pennsylvania, to Fort Pitt Bridge Works, Pittsburgh.

125 tons, state bridge replacement, Montgomery county, Pennsylvania, to McClintic-Marshall Corp., Bethlehem, Pa.

125 tons, plant addition, National Adhesive Co., Plainfield, N. J., to Lehigh Structural Steel Co., Allentown, Pa.

115 tons, state highway bridge, Jay county, Indiana, to McClintic-Marshall Corp., Bethlehem, Pa.; Buesching & Hagerman, Fort Wayne, Ind., general contractor. Truscon Steel Co., Youngstown, O., awarded 52 tons of reinforcing bars.

110 tons, highway bridge, Ludington, Mich., to R. C. Mahon Co., Detroit.

100 tons, store improvements, Marshall Field & Co., Chicago, to Gage Structural Steel Co., Chicago.

100 tons, for water commission, Wilmington, Del., to McClintic-Marshall Corp., Bethlehem, Pa.; through Henry E. Baton, Philadelphia.

100 tons, ash handling plant, Philadelphia, to Belmont Iron Works, Philadelphia.

100 tons, Montgomery, Ward & Co., building, Pomona, Calif., to Consolidated Steel Corp., Los Angeles.

100 tons, forms for pier E, San Francisco-Oakland bridge, San Francisco, to Moore Drydock Co., Oakland.

100 tons, post prison, Fort Sam Houston, Texas, to Alamo Iron Works, San Antonio, Tex.; Gilbert Falbo, San Antonio, general contractor.

Unstated tonnage, shapes and bars, underpass, I. & G. railroad, Milam county, Texas, to Petroleum Iron Works, Beaumont, Tex., and Concrete Engineering Co.; C. W. Gilfillan, Austin, Tex., general contractor.

Unstated tonnage, structural work, Cumberland river dam, Tennessee, to Virginia Bridge & Iron Co., Roanoke, Va.

Shape Awards Compared

	Tons
Week ended Jan. 27	**15,990**
Week ended Jan. 20	**10,720**
Week ended Jan. 13	**28,252**
This week in 1933	**6,995**
Weekly average for 1933	**15,413**
Weekly average 1934	**17,481**
Weekly average, Dec.	**22,058**
Total to date 1933	**32,575**
Total to date 1934	**69,928**

Contracts Pending

5000 tons, bridge, Choptank river, Maryland.

1180 tons, highway bridges, Nebraska.

1173 tons, 9-span deck truss and plate girder bridge between North Whitehall and Lehigh townships, Lehigh and Northampton counties, Pennsylvania; bids to secretary of highways, Harrisburg, Pa., Feb. 9.

750 tons, seaplane hangar, naval base, Coco Sola, C. Z.; H. B. Nelson Construction Co., Atlanta, Ga., low for general contract.
500 tons, boiler house, Pearl Harbor, T. H., specification 7438; bids Feb. 28.
450 tons, bridge over Upatoi creek; bids in with quartermaster, Fort Benning, Georgia.
420 tons, bridge for Owyhee, Oregon, reclamation project; bids in.
413 tons, steel truss bridge between Dunkard and Monongahela townships, Greene county, Pennsylvania; bids to secretary of highways, Harrisburg, Pa., Feb. 9.
400 tons, estimated, bridge, Suwannee river, Dixie-Gilchrist county line, Florida; Vincennes Bridge Co., Vincennes, Ind., low.
400 tons, five highway bridges, Illinois.
400 tons, highway bridges, Mississippi.
380 tons, buildings, state hospital, Sonyea, N. Y.; W. E. O'Neil Construction Co., Chicago, general contractor.
325 tons, buildings, state prison, Comstock, N. Y.
320 tons, state bridge, Buchanan, Va.
310 tons, state highway bridge, Wilcox, Fla.
300 tons, bridge, Long Island railroad, Long Island City, N. Y.
225 tons, plant additions, Andrew Jergens Co., Cincinnati.
200 tons, boiler supports, bureau of supplies and accounts, navy, Washington.
179 tons, pony truss bridge, Everett borough, Bedford county, Pennsylvania; bids Feb. 9 to secretary of highways, Harrisburg, Pa.
175 tons, distillery, Frankfort, Ky.
127 tons, reinforced concrete and structural steel viaduct, Girard township, Erie county, Pennsylvania; bids to secretary of highways, Harrisburg, Pa., Feb. 9.
116 tons, shapes and bars, plate girder bridge, Troy township, Bradford county, Pennsylvania; 93 tons of structural steel and 23 tons of plain steel bars; bids to secretary of highways, Harrisburg, Pa., Feb. 9.
114 tons, plate girder bridge, Curwensville borough, Clearfield county, Pennsylvania; bids to secretary of highways, Harrisburg, Pa., Feb. 9.
130 tons, bridge, Tula, Mich.; Wickes Engineering & Construction Co., Des Moines, Iowa, low for general contract.
Unstated tonnage, Temple library, Philadelphia; action indefinite.

Reinforcing

Reinforcing Bar Prices, Page 43

Pittsburgh—A Pennsylvania state letting for Feb. 9 will require about 400 tons of plain steel bars. Although private work is lacking, some large government jobs are pending. New billet steel bars continue 1.80c for mill lengths, and 1.90c for cut lengths.

Cleveland—Work and new awards on CWA projects are slowing up, and concrete bar fabricators have comparatively few jobs which to figure. A Cleveland sewage disposal plant project, requiring about 1000 tons of bars, may be closed this week.

Chicago — Several fairly large lots of reinforcing bars are up for bids in this district. Action is expected shortly on a filtration plant at Milwaukee involving 3000 to 4000 tons.

Boston — Few large awards are noted, but small-lot buying has improved.

New York—Reinforcing steel demand is light, mainly for public work. Bids are in on 1000 tons of bars and mesh for New York state highways.

Philadelphia—Orders are expanding, due chiefly to miscellaneous requirements. Billet bars in cut lengths are 2.19c, Philadelphia.

Contracts Placed

900 tons, CWA projects at Seattle, divided among Pacific Coast Steel Co., Northwest Steel Rolling Mills, and Pioneer Sand & Gravel Co., Seattle.
330 tons, Fourth avenue south viaduct, Seattle, to Pacific Coast Steel Co., Seattle; Sheble Construction Co., Seattle, general contractor.
300 tons, sewer, Hamilton, O., divided

The *appearance* of small tools has changed but little in the last few years, but what a change in *output!* Taps have ground instead of cut threads; reamer blades a little different rake; twist drill webs are a little thicker or a little thinner. Slight changes perhaps, but the result of ceaseless engineering and testing, that *output per individual tool* might be increased.

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between Truscon Steel Co., Youngstown, O., and Ben-Tom Supply Co., Columbus, O.

275 tons, concrete arch bridge, Baxter county, Arkansas, to Carter-Waters Corp., Kansas City, Mo.; Rucks-Brandt Construction Co., Tulsa, Okla., general contractor.

200 tons, Henrotin Polyclinic hospital, Chicago, to Concrete Steel Co., Chicago.

191 tons, sales and service building for Chrysler Corp., Pittsburgh, to Truscon Steel Co., Youngstown, O.; through Henry Bussey, Pittsburgh; included 30 tons of structural steel.

181 tons, highway work and bridges in four counties in California for state, to unnamed interests.

180 tons, Richmond street powerhouse, Philadelphia, to Taylor, Davis Inc., Philadelphia.

165 tons, unassembled noncorrosive fabric, federal engineer, New Orleans, to Copperweld Steel Co., Glassport, Pa.; Truscon Steel Co., Youngstown, O., awarded 2,400,000 square feet of galvanized welded wire fabric for same point.

160 tons, reinforced concrete covered reservoir, Beaumont, Tex., to Jefferson Steel Co., Beaumont; Christy-Dolph Construction Co., Dallas, general contractor.

150 tons, highway, Burlington and Camden counties, New Jersey, to Truscon Steel Co., Youngstown, O.; through M. J. Groves & Co.

100 tons, bridges and underpasses, Burleson, Dallas, Hansford and Rusk counties, Texas, to Austin Bros., Dallas; Austin Bridge Co., Dallas, Tex., general contractor.

100 tons, Montgomery, Ward & Co., building, Pomona, Calif., to unnamed interest.

Contracts Pending

1143 tons, Nogales flood control project, El Paso, Tex.; bids Jan. 22.

868 tons, CWA project No. 581, Arroyo de Los Jardines drainage district, Los Angeles; bids being taken.

713 tons, bridge, Cook county, Illinois.

450 tons, 6 and 10-inch, Jamestown, N. Y.; bids in Jan. 24.

404 tons, bridge on Sunset and Glendale boulevards, Los Angeles, for state; general contract to Herbert Baruch Corp., Los Angeles.

333 tons, two state bridges in Los Angeles county, California; bids Feb. 7.

300 tons, high school addition, Bakersfield, Calif.; bids Jan. 22.

259 tons, state crossing in Ventura county, California; Lindgren & Swinerton, San Francisco, low for general contract.

223 tons, 9-span deck truss and plate girder bridge, between North Whitehall and Lehigh townships, Lehigh and Northampton counties, Pennsylvania; bids to secretary of highways, Harrisburg, Pa., Feb. 9.

210 tons, highways and small bridges, mainly in Middlesex county, New Jersey; bids Jan. 29.

170 tons, water reservoir, Amarillo, Tex.

150 tons, city hall bracing, Long Beach, Calif., for Graham Bros., Los Angeles.

114 tons, reinforced concrete and structural steel viaduct, Girard township, Erie county, Pa.; bids to secretary of highways, Harrisburg, Pa., Feb. 9.

Concrete Awards Compared

	Tons
Week ended Jan. 27	2,934
Week ended Jan. 20	3,899
Week ended Jan. 13	9,359
This week in 1933	3,502
Weekly average for 1933	3,771
Weekly average, 1934	4,862
Weekly average, Dec.	5,283
Total to date 1933	17,393
Total to date 1934	19,449

Wire

Wire Prices, Page 43

Pittsburgh — The wire market shows no improvement with buying confined chiefly to small lots. Several Pittsburgh wire mills find difficulty scheduling operations on such meager buying. One Pittsburgh wire mill closed its open hearths last week because of lack of orders. In carload lots, the market is still 2.20c, Pittsburgh, for plain wire and $2.35 a keg for nails.

Cleveland—Orders for wire and wire products have shown steady improvement each week since the beginning of the year, though tonnage is below expectations, due to slowness in automotive releases.

Chicago—Wire buying is increasing more rapidly than are specifications and shipments. The latter still are influenced by heavy deliveries late in fourth quarter.

Boston—Demand for wire, notably round and specialties, continue to gain. This is bringing out better demand for wire rods and in some instances an increase in alloy steel wire products. Plain wire holds at 2.30c, Worcester, Mass.

Detroit—Slightly heavier orders are noted for spoke wire and there is some improvement in demand for finer gages of spring wire and some wire specialties.

Strip Steel

Strip Prices, Page 43

Pittsburgh — A proposed advance in sheets would affect both hot and cold-rolled strip steel and $3 to $5 a ton may be added to the present hot-rolled strip base of 1.75c, Pittsburgh, and the cold-rolled strip base price of 2.40c, Pittsburgh or Cleveland. Demand is improving and the market shows more numerous and individually heavier orders. Revisions, generally effective Feb. 1, have been made in prices of both hot and cold-rolled strip in various stainless analyses.

Cleveland—Releases from automobile partsmakers are heavier. Some estimate their requirements this year will be about 50 per cent heavier than last year. A few fairly good orders have been received from makers of small road and agricultural implements.

Chicago — Strip steel specifications and shipments gradually are increasing, with the rate of improvement still retarded by some automotive production delays. A large portion of strip stocks on hand early this year have been consumed and heavier orders are in early prospect from motor car centers. Although indications point to an early advance in sheet prices, similar revisions in strip have not been intimated. Hot and cold-rolled stainless steel strip have been reduced, effective Feb. 1.

Boston—Cold-rolled strip buying is up a trifle with some rerollers taking slightly heavier shipments of hot-rolled strip. The gain in demand for cold-rolled to points outside New England, is in surprising volume.

New York—Steel strip is moving slowly but an increase in prices is expected within a short time.

Philadelphia—Talk of an early increase in price of steel strip is revived, some observers expecting a change within a fortnight. Meanwhile, buying is slow.

Bolts and Nuts

Bolt, Nut, Rivet Prices, Page 43

New York Central opened bids last week on nuts and bolts for first quarter, under the Clayton act, and 20 of the 22 bidders submitted identical prices.

At Cleveland nut and bolt orders so far this year are 75 per cent ahead of the comparable period last year. Automotive releases especially are heavy.

Demand for bolts, nuts and rivets in January follows the moderate rate of December. Prospective needs for automotive and railroad car building promise considerable improvement soon. Farm implement builders are taking more than a year ago, though their total is light.

Bolts and nuts are 70 off list, small rivets 70 and 10 off and large rivets 2.75c, Pittsburgh, and 2.85c, Chicago.

Scrap

Scrap Prices, Page 45

Pittsburgh—The edge is off the scrap market temporarily because of failure of consumers to test the market. Although the last sale here was at $13.75 for No. 1 heavy melting steel, some distress scrap is accumulating in small lots and occasional offers to sell at $13.50 and $13.25 are heard. By its purchase last week of machine shop turnings, a district mill's commitment reaffirmed the present spread of $9.50 to $10.

Cleveland — Greater interest is manifested in scrap supplies by important melters. Prices are sentimentally strong, without confirming sales. Supplies from outside are beginning to move more freely.

Chicago—Heavy melting steel has advanced 25 cents on small sales at $11, equaling the peak attained last summer. Speculative buying by dealers continues active, but mills have been satisfied to place only moderate lots in the absence of large offerings. Fairly heavy tonnages are being taken at docks for future movement. Supplies of railroad scrap continue limited, sales of heavy melting steel bringing around $11. Only less desirable grades, such as automotive material, can be picked up at as low as $10.50.

Boston—Scrap prices continue firm, relatively higher for outside shipment than for New England. Worcester continues to pay $8.25 for No. 1 heavy melting steel, delivered. For shipment to Pennsylvania dealers have paid $7.30 for the same grade while No. 2 scrap is higher, at $5.75, f.o.b. cars.

New York—Domestic consumers of scrap have been less active. Export demand tends, however, to hold melting steel grades firm and slight advances over $9, barge for No. 1 and $8, barge, for No. 2 are noted.

Philadelphia — With shipments of scrap held up by melters at Coatesville and Harrisburg, Pa., prices are slightly easier. An export shipment left here recently for England and another is loading for Japan, against an old contract. Japan now is negotiating for second quarter tonnage only. Demand from English melters has fallen off recently, due to depreciation of sterling.

Detroit—A dull market prevails for steel and iron scrap but prices are supported by an undercurrent of strength. Some weakness in bids on lists a week ago was followed by immediate rebound to currently quoted levels.

Buffalo—Some small lots of No. 1 heavy melting steel have been sold locally at $10.50 to $11 but no tonnage deals have taken place. Dealers have marked up borings and turnings, cast scrap, rails and some other grades in their asking prices but so far confirming sales are lacking.

St. Louis—Iron and steel scrap continues strong, with specific advances in several important grades, including heavy melting steel. Strength is due more to scarcity and sympathy with other markets than to consumer demand. Offerings are light. Aside from 2000 tons of steel to an east side mill, for first quarter, buying is in small lots.

Cincinnati—Activity in iron and steel scrap is confined to dealer purchases for speculative account but this situation has not matched price increases in other districts.

Birmingham, Ala.—While firmer prices are noted the market has not taken on strength. Confidence is

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strong, however, that there will be need for heavy melting steel, No. 1 cast and other class of scrap.

Toronto, Ont.—Trading in iron and steel scrap is on the upgrade. While steel grades are moving slowly to Canadian consumers, inquiries are being received from British interests for delivery next summer. Domestic demand runs to special iron grades with foundries the principal buyers.

Pig Iron

Pig Iron Prices, Page 44

Pittsburgh — Only one merchant furnace continues in blast in this district. State of Pennsylvania is inquiring for bids on 13,650 pounds of cast iron blast plates for an Erie county bridge, closing Feb. 9. No change is in immediate prospect for base prices.

Cleveland—Sales and shipments continue to improve, reflecting better foundry operations, especially on automotive work. A merchant furnace interest here during the week booked 5000 tons in lots up to 1000 tons, a little more than twice the tonnage in the preceding week.

Chicago—Orders continue to improve and although shipments still are lighter than during December consumption is increasing. Automotive foundries are experiencing brisk operations, but definite gains in schedules of other plants, including jobbing foundries, are noted as well.

Boston—Several attractive inquiries from textile machinery builders are expected shortly. Meanwhile, buying continues in small lots. Domestic prices are firm, but some imported iron is selling under generally quoted prices.

New York—Buying is light, although foundry melt is fairly heavy. Prospects are for better demand in February.

New York—Buying continues sluggish, although the foundry melt has improved slightly.

Buffalo—Demand is spotty. Agricultural implement makers, radiator manufacturers and foundries dealing with the oil and gas trades are operating on good schedules but others have little business.

Cincinnati—Jackson, O., for many years a basing point for bessemer ferrosilicon and silvery irons, effective Feb. 3 becomes also a base for basic iron for open-hearth use, $18.75 a gross ton; for No. 2 foundry, $19.25; and for malleable iron, $19.25.

St. Louis—Melt is improving, but most users are well covered. Uncertainties over labor and material costs are delaying pig iron contracting in some instances.

Birmingham, Ala.—New business is developing and one producer intimates early possibility of increased production.

Toronto, Ont. — Improvement in iron and steel is reflected in stronger demand for merchant iron. Production is maintained at its peak level for 1933 with four stacks blowing.

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Iron Ore

Iron Ore Prices, Page 44

Cleveland — Two favorable features are noted in the Lake Superior Iron Ore association's current report on consumption and stocks. The reserves on Lake Erie docks and at furnaces Jan. 1 were about 2,500,000 tons below the ten-year average for that date. In December ore was consumed at a rate about two and a half times as fast as in the same month in 1932. The association's report:

	Tons
Consumed in November	1,460,037
Consumed in December	1,597,680
Increase in December	137,643
Consumed in December, 1932	630,115
On hand at furnaces Jan. 1, 1934	29,346,475
On Lake Erie docks Jan. 1, 1934	5,326,674
Total at furnaces and Lake Erie docks Jan. 1, 1934	34,673,149
Total Jan. 1, 1933	31,489,671

Coke

Coke Prices, Page 43

Metallurgical brands of coke are still in poor demand. Standard furnace coke holds at $3.50, with medium sulphur coke $3.25, Connellsville, Pa. Foundry coke continues $4.25, Connellsville ovens, for the common grade and $5 for premium.

Consumption of by-product foundry coke at Chicago continues to improve with betterment in the iron melt. A more substantial gain in shipments is scheduled for the near future when stocks are reduced, although the movement this month has held better than in pig iron.

Shipments of by-product coke at St. Louis are at a lower rate than in December. Production and shipments are steady in the Birmingham district.

Metals

Nonferrous Metal Prices, Page 43, 45

New York—Consumers of nonferrous metals displayed little interest in requirements last week and the trend in prices was slightly downward.

Copper—Continued delay on the copper code and efforts of custom smelters to balance sales with intake resulted in a decline in the red metal to 8.25c, Connecticut. Mine producers also were quoting at lower levels. A generally acceptable code for the copper industry has not been worked out as yet. A hearing on a code may take place in about two weeks.

Lead—Little demand for lead was encountered but prices held steady on the basis of 4.00c, New York, and 3.90c, East St. Louis.

Zinc—Prices eased somewhat and prime metal for delivery through March became available at 4.25c, East St. Louis. Buying was slow.

Tin—Quotations tended downward as the value of the dollar increased in terms of sterling. Trading was confined to a few lots from day to day.

Aluminum—Virgin metal continued available at several cents under listed prices. Secondary ingot moved upward due to scrap scarcity and higher prices.

Silver—The open market price fell to 43.25c an ounce near the close of the week.

Equipment

Chicago—Equipment and machinery continue to show moderate gains in activity both in volume and in diversification. Government spending continues to influence sales of a variety of equipment. Steel companies are more active in planning repairs and improvements to plants, inquiries for rehabilitation work being reported heavier this month. Additional work in the relining of furnaces and ovens is in prospect.

New York—A fair number of domestic orders for machinery and equipment are being figured while several builders note a substantial increase in export orders. Niles-Bement-Pond Co. especially has registered gains in export sales, those for the last quarter being double those for the first nine months of last year, equaling foreign sales for the period from 1923-28. Russia is expected to allocate considerable volume next month from a large list.

Boston—Grinding and textile machinery building shops are the most active in New England. Some other metalworking machine shops are operating on fair schedules. American Steel & Wire Co., Worcester, Mass., will erect a new soaking pit plant at the South Works, 189x103x85 feet, in an all steel building in which eight new pits, stripping, loading and other equipment will be installed. Each pit will have a capacity of six 3-ton ingots.

Coke By-Products

Coke By-Product Prices, Page 43

New York—Contract shipments of naphthalene are expected to start in volume next month. Industrial demand for phenol is slightly heavier.

1933—2,048,000
1934—3,500,000!

Detroit is predicting three and a half million automobiles in 1934,—a 75% increase over 1933. That means a corresponding increase in drop forge production, and the business is going to the shop that is ready for it.

The ability of your shop to absorb a sudden increase in production is seriously impaired by code restrictions on operating hours. Correct this situation by replacing obsolete equipment with modern Erie Drop Hammers.

Now is the time, too, to make repairs, replace worn or broken parts, so that reserve equipment can take the extra production, that cannot be met by overtime. Be prepared for emergencies; remember that with shorter work days it takes longer to get repair parts.

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Demand for distillates has increased slightly.

Tin Plate

Tin Plate Prices, Page 42

Pittsburgh—Tin plate operations in the Pittsburgh district are steady at 35 to 40 per cent. Leading canmakers are not expected to buy much before April. Tin plate manufacturers are either producing for export or working on anticipatory orders. The Pittsburgh base on tin plate continues $5.25.

Quicksilver

New York—Quicksilver prices are firmer, round lots being quoted $67.50 to $68.50 a virgin flask of 76 pounds, and small lots $68 to $69.

Manganese Ore

New York—Caucasian manganese ore is up 2 cents to 24 cents per unit, not including duty, in cargo lots. South African manganese ore, 52 per cent, has been advanced nominally to 24 cents, and the 49 to 51 per cent grade, to 22 cents.

Production

(Concluded from Page 13)

ty for several weeks. Two, however, have heat on for immediate resumption. On the basis of capacity, Detroit district operations are now at 46 per cent.

Youngstown: Decreased 5 points last week to 32 per cent, but expected to rebound to 34 or 35 per cent this week. Republic Steel Corp.'s Warren plant operated all eight open hearths at the end of last week. Of 83 open hearths in the district, 32 are operating.

Cleveland-Lorain—Up 5 points to 64 per cent, Corrigan, McKinney Steel Co. operating nine open hearths, Otis Steel Co., eight, and National Tube Co., Lorain, eight. Corrigan, McKinney is to light at least one more open hearth, and possibly three, this week; Otis to take one off for repairs.

Chicago—Rose from 29 to nearly 30 per cent, first increase this year. Eight of 36 steelworks blast furnaces continue active. This week expected to see unchanged or slightly higher operations.

Pittsburgh—Dropped 2 points to 22 per cent last week because anticipated railroad and automotive tonnages have not yet appeared, also because many steel producers have finished stocking. This week the operating average will drop another point to 21 per cent.

Last week Carnegie Steel Co. resumed in one Edgar Thomson blast furnace, but Jones & Laughlin recently banked one Aliquippa furnace, so of 60 steelworks blast furnaces in the district 17 continue in blast, same as two weeks ago.

Wheeling—Unchanged at 64 per cent last week with 25 out of 39 open hearths in operation. One mill added two open-hearth furnaces but another producer took off two, leaving the net unchanged. For this week, the 64 per cent rate will continue.

Central eastern seaboard — Declined 1 point to 23½ per cent last week, but expectations are that 25 per cent will be reached this week. Much depends upon rail releases. Armament work against old navy contracts is a sustaining factor at present and miscellaneous releases are spotty and new buying is light.

Birmingham — Unchanged at 52 per cent, with continuance of this rate largely dependent upon railroad business.

Buffalo — Steady last week at 32 per cent, but scheduled to rise 2 points this week with the addition of one open hearth, making 13 out of 38 active.

New England — Unchanged last week at 86 per cent, but probably down this week to 77 per cent when one open hearth will be taken off.

Toronto—Pig iron production in Canada is up to the peak of 1933, with four blast furnaces on.

¶Steelworkers at Otis Steel Co., Cleveland, had hardly finished slapping each other on the back in congratulations on a record-tonnage run of wide sheets, Jan. 17, before Wheeling Steel Corp. exceeded the Otis 1800-ton mark for a 24-hour schedule. On Jan. 24 at Wheeling's Steubenville, O., plant, 2200 tons of wide automobile sheets were turned out in a 24-hour period on the Wheeling continuous mill there.

¶Russia reports daily average steel ingot output in November as 22,060 metric tons, 35 per cent over November, 1932, and daily pig iron output as 22,980 tons, or 27 per cent over November, 1932. By comparison, the daily average ingot production in

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the United States in November was 59,265 tons, and pig iron 36,124 tons.

Medals

GENERAL ELECTRIC CO. on Feb. 1 will be presented by the American Institute of the City of New York with a gold medal "for pioneering in industrial research." The institute, more than 100 years old, recognizes achievements in science which profoundly influence human affairs. It is for the establishment and maintenance of its laboratory for pure research that General Electric receives the medal, the first ever awarded it as a corporation.

They Say:

MORE than 40,000,000 tons of steel will be produced in 1934. Railroads and automobile manufacturers appear to be in the market for larger tonnages. Automobile builders expect to assemble 3,000,000 cars this year. The oil industry needs remodeling and replacements which will help the steel industry"—L. S. Hamaker, sales promotion manager, Republic Steel Corp.

¶"Old-time selling is dead. The machine tool code permits frank discussion of a suitable price structure. The result already has been demonstrated in more uniform prices, and as a consequence less emphasis on the price element in selling. This presents the opportunity as well as necessity for a higher quality of salesmanship."—C. S. Stilwell, sales manager and director, Warner & Swasey Co., Cleveland.

¶"It is generally conceded that this depression is a capital goods depression, that the capital goods industries account for the major part of both the decline in the nation's production and current employment. Until those industries are given freedom to revive in natural fashion, there can be no sustained and sound recovery in the nation's business and no far-reaching, permanent relief of unemployment."—N. W. Pickering, president, Farrel-Birmingham Co. Inc.

Labor

NATIONAL compliance board, with chairman William H. Davis presiding, Wednesday opened a hearing on complaints against the Edward G. Budd Mfg. Co., Philadelphia, involving alleged interference by the company in the employes election and organization for collective bargaining.

The Budd company and the Weirton Steel Co. are the two outstanding interests which have resisted the encroachment of the national labor board in the supervision of employe elections.

No public development in the Weirton case has come since E. T. Weir, chairman of the National Steel Corp., of which the Weirton company is a subsidiary, conferred with President Roosevelt several weeks ago.

¶Out of 1609 ballots cast at Superior Steel Corp.'s Carnegie, Pa., works Tuesday, 973 were returned in favor of the Amalgamated Association of Iron, Steel and Tin Workers, the election having been held "for all purposes of collective bargaining with Superior Steel's employers." Results of the election, company officials said, were "entirely satisfactory."

¶Webster Mfg. Co., Tiffin, O., on Jan. 23 advanced wages an average of 10 per cent, effective Jan. 1. This was the third increase since Sept. 1.

¶Because a nonunion pumper was named assistant foreman at the strongly-unionized Isabella mine near Brownsville, Pa., of Weirton Steel Co., 700 miners went out on strike Jan. 24 and informed mine superintendent D. A. Boyer that they would continue to strike unless the nonunion member was demoted.

¶Lehigh Valley Ornamental Iron Works association, meeting at Allen-

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town, Pa., Jan. 18, approved a 6-hour day, 5-day week. Shops represented at the meeting were: Richter Ornamental Iron Works, Easton; Bethlehem Ornamental Iron Works and Bethlehem Fence Co., Bethlehem; Hanlon Ornamental Iron Works and Allentown Iron Works, Allentown; and Peters Iron Works, Newside.

Men of Industry

(*Concluded from Page* 18)

1146 East 152nd street. He will cover the northern Ohio section, including the Youngstown steel district.

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J. R. Laycock, Omak, Wash., has been elected president of the Molybdenum Mines Co., succeeding H. L. Hill.

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Harold A. Hallstein, general auditor of the Austin Co., engineer and builder, Cleveland, has been made a vice president of the company. He will continue as auditor, a position which he has held for seven years.

□ □ □

John I. Kitts, of Duluth, has been appointed sales representative for hollow, solid and auger drill steels and tool steels in the north central states, products of A. Milne & Co., New York.

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Phillip C. Kemp, former member of Simpson, Thatcher & Bartlett, New York attorneys, and former NRA deputy administrator, has been appointed vice president and general counsel for the American Locomotive Co., New York.

□ □ □

O. C. Thomas has been named district sales representative in Oklahoma, Kansas and New Mexico for the Harrisburg Pipe & Pipe Bending Co., Harrisburg, Pa., with headquarters at 1503 Hunt building, Tulsa, Okla.

□ □ □

C. W. McDaniel, director of sales and advertising for Aluminum Industries Inc., Cincinnati, has resigned to be succeeded by Bruce V. Keller, formerly district manager, who is now advertising manager, and W. E. McIlroy, formerly in charge of field sales, who becomes sales manager.

□ □ □

Willoughby F. Brazeau has become associated with the International Selling Corp., 70 Pine street, New York, in charge of ore sales. This company sells North African iron ores and Turkish chrome ore in the United States. Mr. Brazeau formerly was with the American Smelting & Refining Co., New York.

□ □ □

Warren Bicknell has been elected director of the National Acme Co., Cleveland, to fill the vacancy caused by the recent death of George E. Randles.

Windows of Washington

(*Concluded from Page* 14)

Washington's failure to understand the industry.

In much the same manner that Secretary of Labor Perkins views the production of steel in the same category with garments and cigars, the trade commission confuses the heavy industries with the light ones. It can scarcely differentiate it from the retail trade. The need of education by the steel industry appears great.

Not one of the members of the trade commission today is a holdover from the Pittsburgh-plus days of 1924, but the spirit is almost identical. Ten years ago most members were Wilson appointees and reflected his solicitude for small industry. Today, Roosevelt thought dominates the commission, and it is "the little fellow" who is to be safeguarded against the big bad wolf of industry.

Incidentally, General Johnson might be won over as an ally if a contest with the trade commission develops. The commission has been a little jealous of the general, and its being delegated to handle retail complaints independent of NRA has not soothed the general any.

But the price of the general's support might be a concession at the February conclave of all NRA code authorities, when a shorter work week will be bargained for."

Steel in Europe

Foreign Steel Prices, Page 46

London — (*By Cable*) — Business expansion in the Middlesbrough area is becoming quieter. Five blast furnaces are being prepared for relighting as hematite stocks are decreasing rapidly. A tonnage of pig iron has been shipped to Italy and a steel tonnage to Russia. Structural steel trade in the Midlands is improving. Tin plate makers fear some mills will be forced to close owing to depreciation of the dollar. A tonnage of Canadian billets is reported to have arrived, underselling Continental prices.

The Continent reports export trade is developing, especially to the Far East. Germany reports the Argentine is buying more freely.

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Cincinnati, Ohio

Pacific Coast

Pacific Coast Prices, Page 43, 44, 46

San Francisco—(*By Air Mail*)—Structural shape and reinforcing bar awards lead the market. Pacific Coast Steel Corp. is low bidder on 680 tons of girder rails for the municipal railway of San Francisco. No action has yet been taken on 25,000 to 40,000 tons of rails for the Southern Pacific Co.

Awards of concrete bars in the week totaled 3300 tons and brought the aggregate for the year to 5371 tons as compared with 1541 tons for the corresponding period in 1933 New inquiries include 868 tons for a drainage district in Los Angeles, 333 tons for two bridges in Los Angeles county and 300 tons for a school in Bakersfield, Calif.

The only plate award of size went to Bennett & Taylor, Los Angeles, 100 tons for a gasoline storage system at Hamilton Field, Calif. Alta Electric & Mechanical Co., San Francisco, is low on 200 tons for two 200-horsepower boilers for Mare Island, Calif.

Structural lettings aggregated 1430 tons and brought the total for the year to 4223 tons, compared with 2166 tons for the first three weeks in 1933. McClintic-Marshall Corp., Bethlehem, Pa., secured 555 tons for two bridges over Eel river in California. H. B. Nelson Construction Co., Atlanta, Ga., is low on 750 tons for a seaplane hangar at Coco Sola, C. Z., for the naval base.

No cast iron pipe awards of importance were reported. Fresno, Calif., opened bids Jan. 25 for 384 tons of 8 to 12-inch pipe, and Glendale, Calif., on 265 tons of 16-inch pipe. American Cast Iron Pipe Co. is low on 262 tons for Hayward, Calif.

Northwest Grows Busier

Seattle—Increased activtiy in the iron and steel markets of the Pacific Northwest is apparent. Awards exceeded 2000 tons, and tonnages immediately pending approximate 5000 tons.

Reinforcing awards included 330 tons for the Fourth avenue, south, viaduct at Seattle, taken by the Pacific Coast Steel Co., Seattle. This firm with the Northwest Steel Rolling Mills Inc. and Pioneer Sand & Gravel Co., Seattle, divided 900 tons of ¼-inch squares and ⅜ and ½-inch rounds for CWA local projects. Johnson Bros., Seattle, have the award for the Ambursen side dam of the Bonneville, Oreg., project at $878,300, involving 2300 tons of reinforcing.

Approximately 1000 tons of shapes were awarded to Wallace Bridge & Structural Steel Co., Seattle, for the Fourth avenue, south, viaduct. Chicago Bridge & Iron Works, Chicago, is believed low for 420 tons involved in a bridge to carry water siphons in the Owyhee, Oreg., project. This job also calls for 900 tons of plates for two siphons, Owyhee and Snively rivers. Bids were opened this week, but awards are pending. Seattle will receive bids, Jan. 30, for 1164 tons of sheet steel piling and shapes for the seawall improvement.

The jobbing trade is quiet, although better than a year ago. Prices are being well maintained and conditions have materially improved since the code went into effect.

Local demand for scrap is small, although the market was stirred by an inquiry from British Columbia for 1000 tons of cast iron. Some was sold here at $8.50 gross, f.a.s. No. 1 melting scrap is quoted generally at $8.50 gross, f.a.s., while scrap rails on the same basis are bringing about $9.50.

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Here and There In Industry

CINCINNATI MILLING MACHINE CO., Cincinnati, is observing its fiftieth anniversary in 1934. In the half-century it has grown from small rented quarters in downtown Cincinnati to a plant with 17 acres of floor space at Oakley, a Cincinnati suburb. The company was incorporated in 1884 as the Cincinnati Screw & Tap Co. Need for a milling machine in its manufacturing process, with lack of means to buy one, led to building one for its own use. Several neighboring concerns, observing the miller, asked the company to build similar machines for them. From this start production of milling machines soon overshadowed the screw and tap business and the latter was sold. In 1889 the present name was adopted and production was confined to milling machines and cutter grinders.

In 1887 Fred A. Geier, the present president, became associated with the company. In the early nineties a plant was built at Spring Grove and Alfred streets and in 1909 a tract of 100 acres was bought at Oakley, and a new plant erected there as the nucleus of a factory colony, which has grown to proportions since. In 1907 the company built its own foundry to secure castings of high grade. In 1921 the Cincinnati Grinding Machine Co. was acquired and the manufacture of cylindrical grinding machines added to its line. Centerless grinders were added the next year.

All through the company's history its products have been under constant change as new developments were devised to increase their efficiency, many of the improvements becoming standard in all machines of their type. Some of these contributions include the motor enclosed pyramid column type with antifriction bearings in the drive and later antifriction bearings in the spindle; hydraulically-controlled table feed; rectangular overarm; power feed and speed changes; simplified and more convenient milling machine controls; flooded lubrication; wide-spaced milling cutters.

□ □ □

W. W. Sly Mfg. Co., Cleveland, manufacturer of foundry cleaning room equipment, marks its sixtieth anniversary in 1934. W. W. Sly, founder, after intimate contact for several years with the foundry industry established his own business in 1874, for the manufacture of tumbling mills of the exhaust type, his own invention. He shortly thereafter developed the cloth screen type dust arrester to collect the dust from tumbling barrels.

This specialization led to the first developments of the present Sly blast cleaning equipment. From its small beginning the company's plant has grown to include a tin shop for dust piping systems, sheet metal shop, plate shop, structural shop, an extensive machine shop and a woodworking department.

□ □ □

Colorado Fuel & Iron Co., Denver, is resuming production in its steel rail mill on the basis of the recent order for 23,000 tons of rails for the Santa Fe and other orders. About 450 men will be re-employed as a result.

□ □ □

Diamond Chain & Mfg.. Co., Indianapolis, has appointed Rodney Davis, 624 Race street, Philadelphia, distributor for its products in the Philadelphia district.

□ □ □

Climax Molybdenum Co., Climax Colo., is producing about 3500 tons of ore daily, between 60 and 70 per cent more than in the corresponding period of 1933.

□ □ □

W. S. Barstow & Co., New York, has changed its name to the E. M. Gilbert Engineering Corp., to identify the organization with its president, E. M. Gilbert. The organization functions as a centralized engineering, construction and management company for various utility interests.

□ □ □

Superior Engine Co., Springfield, O., has changed its name to National-Superior Co., after 45 years under the former style. The change is in name only, for corporate reasons, management and product undergoing no alteration. Stationary and marine diesel and gas engines, compressors and similar products will continue its main output.

□ □ □

Sterling Wheelbarrow Co., Milwaukee, finds demand for foundry flasks tending upward, while wheelbarrow buying has diminished following completion of large orders for CWA projects. December was the busiest in 28 years in the wheelbarrow department, an average of 800 units per day being attained, with a top of 1278 for one day.

□ □ □

J. D. Christian-Engineers, 514 Brannan street, San Francisco, has been licensed by the Falk Corp., Milwaukee, to manufacture series "A" Rite-Lo-Speed motors, under the patent issued to J. D. Christian and now owned by the Falk Corp. Series "HD" is being manufactured under pending patent applications owned by Mr. Christian.

□ □ □

Roots-Connersville Blower Corp. is the new name adopted by the former Connersville Blower Co. Inc., Connersville, Ind., thus indicating the units that make up the company. Management is unchanged. Officers are: L. J. Brown, chairman of the board; J. S. Tatman, president; B. C. O'Brien, first vice president; G. W. Ansted, second vice president; W. E. Newkirk, treasurer; Emery Huston, secretary. One unit of the company dates back to 1854 and all

PHILO BRAND
QUALITY SERVICE DEPENDABILITY
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Ferro Alloys

For Open Hearth — Electric and Foundry Practice

FERRO SILICON
50 — 75 — 85 — 90%

SILICO MANGANESE
ALL GRADES

FERRO CHROME
HIGH CARBON

FERRO MANGANESE

Ohio Ferro-Alloys Corporation
Canton, Ohio
Plant at Philo, Ohio
CHICAGO DETROIT

have built the same line of equipment for many years.

□ □ □

Charles Hart & Associates, Chester, Pa., has been organized to examine and report upon all phases of business propositions. It is in a position to furnish information based upon the findings of experts, with respect to financial, technical, operating, personnel and other phases of industrial undertakings of all kinds. Heading the organization is Charles Hart, president, Delaware River Steel Co., Chester, Pa. Mr. Hart is well known in the steel industry. He formerly was president of the Wrought Iron Co. of America and previously had been vice president of Republic Iron & Steel Co. and also of Inland Steel Co.

Present Steel Gains Point To European Renaissance

(*Concluded from Page* 19)

interesting to observe how such novel methods, which must be viewed in the light of experiments on a large scale, will work out in the coming year.

In Central Europe an improvement has set in, especially in Poland and Czecho-Slovakia. Both countries have obtained a number of important contracts from Russia during the latter part of the year.

In the countries of Central and Eastern Europe, however, economic and political conditions still are in a state of flux and it is doubtful whether a final and definite structure will be arrived at before the end of 1934. Business in Spain has been curtailed by political agitations. In Scandinavia a tendency toward an improvement of conditions can be detected in certain directions.

Although space limitation can permit only a rapid review of European conditions, it will be seen that one of the main characteristics of the past year has been an improvement in domestic markets, but the continuation of restricted foreign trade.

Every country is anxious to export more and import less, which is, of course, an impossible proposition. There is, however, a better prospect for iron and steel, in view of the fact that the European steel entente has strengthened its position and more firmly established its international selling syndicates.

Steel export prices have been maintained at a higher rate; export orders are allocated among member countries in accordance with an agreed quota; domestic markets are mutually protected against unreasonable inroads from neighboring countries; export offices are being set up in foreign markets, and gradually this complicated and extensive organization is establishing itself.

Construction and Enterprise

New England

STRATFORD, CONN.—Town, D. S. Sammis manager, Town Hall, is having plans made by A. W. Hagen, care town manager, for a municipal electric light and power plant to cost about $100,000.

PROVIDENCE, R. I.—Owner, care H. Marshak, architect, 36 Exchange place, plans construction of a provision terminal, including refrigeration equipment and a power plant, on Kinsley avenue, to cost $1,000,000.

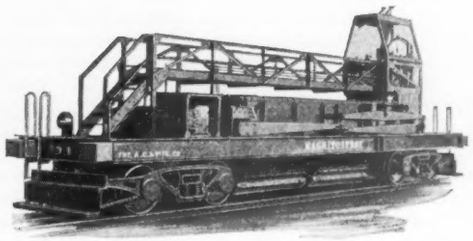
New Jersey

MATAWAN, N. J.—City council plans electrification of the waterworks plant and installation of an additional engine at cost of about $10,000.

New York

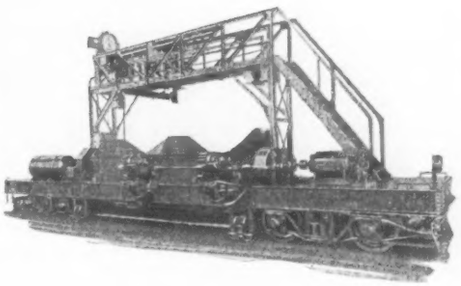
NEW YORK—Howe Scale Co.,

ATLAS SCALE CARS



20 Ton — Double Compartment Scale Car. Journals provided with self aligning anti-friction bearings. Equipped with Atlas Indicator and Recorder.

20 Ton Two Compartment Scale Car with Orr Bin Gate Operating Mechanism. Anti-friction bearings. Equipped with Atlas Indicating and Recording Mechanism.



Other Atlas Products

Gas-Electric and Diesel-Electric Locomotives—Car Pushers—Storage Battery Locomotives—Electrically Operated Industrial Cars—Scale Cars and Weighing Cars of all kinds — Ore Transfer Cars and Blast Furnace Charging Cars.

Coke Oven Equipment

Pushers and Levelers—Coal Charging Cars—Door Handling Machines — Coke Quenching Cars.

Also Atlas Patented Indicating and Recording Mechanism for Weighing Scales.

THE ATLAS CAR & MFG. CO.

Engineers *Manufacturers*

CLEVELAND, OHIO

headquarters Rutland, Vt., has taken 7500 square feet on the seventh floor of the Port Authority Commerce building for offices, display room, assembly and repair departments.

Pennsylvania

SWARTHMORE, PA.—Swarthmore school district has been given a federal loan of $90,000 for construction of a classroom, gymnasium and cafeteria addition to the high school building at Swarthmore.

Ohio

ASHVILLE, O.—The village plans a waterworks system, including iron removal plant, 150-gallon-per-minute pumping plant and 100,000-gallon steel tank on a 100-foot tower, to cost about $60,000. A PWA loan has been approved. Burgess & Niple, 568 East Broad street, Columbus, O., are engineers.

BRADFORD, O.—City is having plans for a power plant prepared by Burns & McDonnell Engineering Co., 107 West Linwood boulevard, Kansas City, Mo., engineers.

BUCYRUS, O.—Formation of the C. O. Henderson Tire & Rubber Co. has been completed and $50,000 capital subscribed. Remodeling of a plant will be started at once to equip it for the manufacture of tires and other rubber goods.

CLEVELAND—Chrome Metal Products Inc. has been incorporated with 250 shares no par value, by Chamberlin & Chamberlin, East Ohio Gas building, Cleveland.

CLEVELAND—New generating equipment for the municipal electric light and power plant will be up for bids in a short time, at cost of $150,000 to $200,000. Plant is to be rehabilitated to remove present fire hazards. William J. Rogers is utility director and Harry L. Davis is mayor.

McARTHUR, O.—A new waterworks system has been assured by a federal loan of $56,000 for two wells, pumping equipment and distribution system. A loan of $47,000 has been made for a sewage treatment works and sewage system.

NEW PHILADELPHIA, O.—A federal loan of $55,000 has been approved, for installation of a Zeolite water softening plant, with pumps, brine tanks and other accessories.

PATASKALA, O.—A waterworks system, including wells, pumping equipment, storage tank and distribution system has been financed by a federal loan of $36,000.

YOUNGSTOWN, O.—A company headed by S. Weiss, City Bank building, Youngstown, O., plans construction of a distillery estimated to cost about $300,000.

Michigan

BARRYTON, MICH.—Board of education will build a school and auditorium building to cost about $75,000. Warren S. Holmes, Lansing, Mich., is architect.

DETROIT—A company headed by H. Kohner, 9431 McQuade street, Detroit, plans construction of a distillery to cost $100,000.

DETROIT—United States engineers will open bids Feb. 2 for dredging about 1,985,000 cubic yards from the channel at the lower end of Lake St. Clair.

DETROIT—William Kuni, architect, Detroit, has prepared sketches for a community building to cost about $40,000, to be erected at Walkerville, Mich.

DETROIT—Maintenance Materials Corp., 680 East Fort street, has been incorporated with $10,000 capital to conduct a manufacturing business, by Edward F. Lee, 467 Notre Dame street, Grosse Pointe Village, Mich.

DETROIT—Modern Die & Tool Co., 227 Iron street, has been incorporated to manufacture dies and tools, by John C. Aldridge, 6164 Yorkshire road, Detroit.

DETROIT—Albert Kahn Inc., architect, Detroit, is preparing plans for a $50,000 clubhouse building at the Michigan state fair grounds for the Detroit Racing association. Plans also include erection of a new grand stand and stables, the entire project to cost $150,000.

ESCANABA, MICH.—Automatic Timer Corp., 923 Ludington street, has been incorporated with $10,000 capital and 500 shares no par value to manufacture electric timers, by William H. Needham, Escanaba, Mich.

GLADSTONE, MICH.—City plans erection of municipal electric light and power plant costing $75,000. F. R. Buechner, Gladstone, Mich., is engineer.

GRAND RAPIDS, MICH.—Robinson & Campau, architects, are making preliminary plans for a $70,000 school building in Manistee, Mich. A federal loan is being sought to finance construction.

HIGHLAND PARK, MICH.—Lane, Davenport Inc., architect, is taking bids on a $25,000 school building at Clarkston, Mich.

Indiana

CONNERSVILLE, IND.—McQuay-Norris Co. has bought the east building of the Connersville Furniture Co. and will use it for the manufacture of automobile replacement parts, piston rings, pistons, pumps and bushings. The company has plants at Indianapolis, Toronto, St. Louis and Connersville.

HOPE, IND.—City plans a water supply system for which a $55,000 PWA loan has been approved. J. W. Moore, 838 Pythian building, Indianapolis, is engineer.

Illinois

CHICAGO—Levin Iron Co., 1103 South Washtenaw avenue, has leased from the Heywood Wakefield Co. 25,000 square feet of space at that location for five years.

CHICAGO—Marpoe Mfg. & Supply Co., 222 West Adams street, has been incorporated with 250 shares no par value to deal in railway supplies and equipment, merchandise and manufactured articles, by Winston & Mayer, 1040 Otis building, Chicago.

PEORIA, ILL.—Sterling Distilling Corp., care Distillers & Brewers Corp., 21 West street, New York, plans distillery additions and reconstruction, to cost about $28,000.

QUINCY, ILL.—H. Sullivan and B. Porter, Quincy, Ill., plan construction of a distillery here, to cost over $100,000.

TONICA, ILL.—Village, L. Long clerk, plans waterworks improvements, including 50,000-gallon elevated tank, deep well and watermains, to cost $50,000. Wells Engineering Co., Geneva, Ill., is engineer.

Southern

ATLANTA, GA.—Wheeling Corrugating Co., Wheeling, W. Va., is moving its warehouse branch from Chattanooga, Tenn., to Atlanta, occupying a warehouse building owned by the Atlanta & West Point railroad, about Feb. 1.

NEW ORLEANS—Great Southern Distilling Co., 427 Carondelet street, New Orleans, plans remodeling of building at Chartres and Piety streets into a modern distillery and erection of new grain house and warehouse.

BATON ROUGE, LA.—Louisiana state university has applied for a PWA loan of $101,000 for construction of a power plant, including generating equipment, and $45,000 for extensions to the heating plant. Weiss, Dryefous & Seiferth, Maison Blanche building, New Orleans, are engineers.

Missouri

ST. JOSEPH, MO.—Joplin Steam Heating Corp., St. Joseph, plans a steam heating and generating plant and distributing system. A PWA loan of $150,000 has been applied for.

Arkansas

FAYETTEVILLE, ARK.—University of Arkansas plans construction of 1-story chemistry building, estimated to cost $580,000. Wittenberg & Deloney, Southern building, Little Rock, Ark., are architects.

Texas

GALVESTON, TEX.—High Grade Packing Co., Sixty-fifth and Broadway, plans a power plant and electrical equipment for its plant, to cost about $35,000.

Wisconsin

GREEN BAY, WIS.—New bids for control equipment for intercepting control station and switch gears for new sewage disposal plant will be taken soon. Original bids were rejected. Total cost of project is $750,000. James H. McGinnis is chairman of the sewerage commission.

HARTFORD, WIS.—Federal loan of $40,000 has been granted for enlarging municipal power plant. Rollin Abbott is city clerk.

LADYSMITH, WIS.—Rusk county

board will build a $30,000 machine shop, service station and garage for highway equipment, 60 x 120 and 40 x 50 feet. Plans by G. A. Krasin, architect, Marshfield, Wis. Work will start about April 15.

MILWAUKEE—Forge and blacksmith department of Chicago, Milwaukee, St. Paul & Pacific here was damaged $100,000 by fire, a building 100 x 350 feet being gutted. Damaged machinery is to be reconditioned or replaced at once as work was about to be resumed in the shop.

PRAIRIE DU CHIEN, WIS.—City plans erection of 500,000-gallon steel water reservoir. C. A. Plihal is city clerk.

Iowa

GOWRIE, IOWA.—Approval has been given a report by engineers on the construction of a diesel generating plant of two 150-kilowatt units and a distributing system to cost $80,000. Young & Stanley, Muscatine, Iowa, are engineers.

Kansas

INDEPENDENCE, KANS.—City plans installing 280-300-horsepower oil engine and generator and three high-duty centrifugal pumps. G. Hachmaster is city engineer.

Colorado

DENVER — American Beet Sugar Co., Steel building, plans to install new and additional machinery in its plants at Rocky Ford and Las Animas, Colo.

Pacific Coast

CRESCENT CITY, CALIF. — City has applied for a PWA loan of $300,000 for construction of a municipal waterworks and electric light and power plant. L. C. Lake is mayor.

ESCONDIDO, CALIF.—PWA loan is being sought for $140,000 and a grant of $60,000 for a diesel engine power plant and electric distribution system. J. H. Chase, 826 Civic Center building, Los Angeles, is engineer.

HUNTINGTON PARK, CALIF.—Ernest H. Adams, 2068 Belgrave avenue, has had plans prepared for a pipe reclamation and manufacturing plant to be erected on East Slauson avenue, 80 x 300 feet, on which bids will be asked shortly.

PULLMAN, WASH. — Washington state college, Pullman, Wash., is having plans prepared by Whitehouse & Price, architects, 628 Hutton building, Spokane, Wash., for a 4-story chemistry building 81 x 132 feet, to cost $235,000; by Rigg & Vantyne, Peyton building, Spokane, Wash., for a 4-story science building 100 x 200 feet, to cost $285,000.

Dominion of Canada

LETHBRIDGE, ALTA. — American Beet Sugar Co., Steel building, Denver, in conjunction with Southern Alberta Beet Growers association, Lethbridge, Alta., plans erection of a beet sugar refinery at Lethbridge, dependent on subsidy from Province of Alberta.

New Trade Publications

FURNACES — Ajax Electrothermic Corp., Trenton, N. J., in a leaflet describes its small test furnaces for laboratory use, with illustrations and sufficient data to guide the prospective user.

SPEED REDUCERS—D. O. James Mfg. Co., 1120 West Monroe street, Chicago, in Bulletin 11 describes its right angle spiral bevel gear speed reducers and gears, with illustrations and full data.

LATHES—A catalog, No. 101-A, has been issued by the South Bend Lathe Works, South Bend, Ind., on its lathes, motor-driven by an underneath belt. Attention is also given the countershaft drive lathes.

DUST ARRESTERS — Pangborn Corp., Hagerstown, Md., has issued a bulletin discussing its new all-metal dust collector, as well as giving information on the type of bag used in the positive rapping mechanism employed in the unit.

CARBURIZING COMPOUND—Char Products Co., 1616 Merchants Bank building, Indianapolis, has issued a booklet on its carburizing compound for use in steel treating, presenting information as to the characteristics of the material and its application.

LATHES—Monarch Machine Tool Co., Sidney, O., has issued a bulletin on its centrode device for turning, boring and facing shapes other than round, including ovals, triangles, squares and other forms. Ample illustrations convey the facts accented in the text.

COUNTERBORES — Continental Tool Works, 1220 Oakman boulevard, Detroit, in catalog CT-233 covers its standard straight and taper shank holders, stop collar holders and adjustable length holders. A section is devoted to special operation tools, as well.

COMPRESSORS—Single horizontal, single stage compressors, steam or motor driven, are described in a bulletin by the Worthington Pump & Machinery Corp., Harrison, N. J. Information includes a discussion of the design of various parts and a table of sizes.

PRESSURE GAUGES—Brown Instrument Co., Philadelphia, has published a new catalog featuring its new thermometer and pressure gages indicating, recording and controlling types. New automatic control thermometers and pressure gages are operated by mercury-in-glass switches to eliminate relays and exposed contacts.

HARDENING — Vapocarb hump method for hardening is discussed in a recent bulletin of the Leeds & Northrup Co., 4901 Stenton avenue, Philadelphia. It is pointed out that the method brings the quench point, the rate of heating and finally the furnace atmosphere under complete control to produce correct hardening. The bulletin gives directions for operating.

GOOD USED EQUIPMENT

For

DIE CASTING
FORGING INDUSTRY
MACHINE SHOPS
POWER PLANTS
ROLLING MILLS
STAMPING
and
ALLIED INDUSTRIES
STRUCTURAL,
BOILER
and
TANK INDUSTRY

AIR COMPRESSOR—387 cu. ft. 12 x 12" Chicago Pneumatic, belt drive, NSB, 125 lb. pressure with 42" x 10' Air Receiver and Belt.

FORGING MACHINES—4" National & Acme. Steel Frame. New model. Belt motor drive.

GENERATOR—5000 KW Turbo Generator, GE., 2300 v., 3 ph., 60 cy., condensing 200 lb. steam pressure. Other sizes and types.

GRINDERS—Centerless, No. 4 Cincinnati; No. 2 Cincinnati, M.D.

HAMMERS—600 to 3000 lb. Chambersburg Board Drop; Steam Drop to 12,000 lb.

PRESSES—No. 6½ Bliss Str. Side, 54" bet. uprights, 8" stroke. 195½ Toledo Toggle Drawing. 84" bet. uprights. Stroke bikhidr 17". Stroke plunger 25". Marquette Cushions.

PUMPS—1000 gal. Lea Centrifugal Underwriters Fire Pump, driven by 100 HP. 440/3/60 AC motor. (2) 1500 gal. Steam Underwriters.

SHEARS—No. 45 Str. Side Pels Heavy Duty, cap. 4" round. 3⅝" squares. 22" x 2¼" flats. Rails up to 120 lb. Belt or motor drive.

No. 10 Buffalo. Cap. 3¼" rounds. 3½" squares. Flats 8" x 1¼" and 12" beams & channels.

SLITTER—No. 3 18" Waterbury-Farrel Gang. Cap. 1/16 to 3/16" plate

STRAIGHTENERS—No. 0 United Engr. & Fdry. Co. Cap. 9" x 1¼" flats. 12" beams & channels. 6" angles. 8 rolls. No. 2 & No. 3 Sutton-Abramsen for bars or tubes. Cap. to 6" solid bars. Medart, cap. to 3 15/16" solid bars.

TESTING MACHINES—50,000 lb. Olsen and Riehle. Motor Drive. Other sizes to 600,000 lb.

WHEEL PRESS—Hydraulic, 400-ton Caldwell. 48" bet. bars. 300-ton Niles, 48" bet. parallel bars, motor drive, Triplex Pumps.

In addition to the above, we have available a wide variety of good equipment in various types and sizes.

Manufacturing RITTERBUSH & COMPANY, INC. Equipment
30 CHURCH ST.
NEW YORK CITY

STATISTICS OF IRON AND STEEL INDUSTRY

From dept. of commerce except shipments by U. S. Steel Corp., foundry equipment by Foundry Equip. Mfrs. assoc., river traffic by U. S. engineers at Pitts., electric power by geological survey

Automobiles

Units Production

1932	—United States— Total*	Passenger cars	Canada Total
Jan.	119,344	98,706	3,731
Feb.	117,413	94,085	5,477
Mar.	118,959	99,325	8,318
April	148,326	120,906	6,810
May	184,295	151,683	8,221
June	183,106	160,103	7,112
July	109,143	94,678	7,472
Aug.	90,325	75,898	4,067
Sept.	84,150	64,735	2,342
Oct.	48,702	35,102	2,923
Nov.	59,557	47,293	2,204
Dec.	107,353	85,858	2,139
Year	1,370,678	1,134,372	60,816
1933			
Jan.	130,044	108,321	3,358
Feb.	106,825	91,340	3,298
March	117,949	99,225	6,632
April	180,667	152,939	8,255
May	218,303	184,578	9,396
June	253,322	211,448	7,323
July	233,088	195,019	6,540
August	236,487	195,076	6,079
Sept.	196,082	160,891	5,808
Oct.	138,485	108,010	3,682
Nov.	63,904	42,818	2,291
Dec.	84,045	52,061	3,262
Year	1,959,201	1,602,332	65,924

*Difference of total and passenger cars equals number of trucks. †Average monthly shipments, 1922-23-24 taken as 100.

Fabricated Shapes‡

Net Tons

1932	Bookings Tonnage	Bookings Per cent of capacity	Shipments Tonnage	Shipments Per cent of capacity
Jan.	48,400	12.1	65,600	16.4
Feb.	62,000	15.5	78,000	19.5
Mar.	64,400	16.1	82,400	20.6
April	64,800	16.2	68,400	17.1
May	90,800	22.7	72,400	18.1
June	86,800	21.7	83,200	20.8
July	69,200	17.3	83,600	20.9
Aug.	78,800	19.7	85,000	21.4
Sept.	111,200	27.8	90,800	22.7
Oct.	74,400	18.6	86,400	21.6
Nov.	51,600	12.9	76,000	19.0
Dec.	145,600	36.4	68,800	17.2
Year	948,000	19.8	942,400	19.6
1933				
Jan.	73,679	....	50,965	....
Feb.	50,955	....	46,168	....
March	71,398	....	54,948	....
April	46,095	....	50,387	....
May	42,600	....	63,968	....
June	81,910	....	64,809	....
July	56,482	....	51,303	....
August	78,379	....	67,913	....
Sept.	57,642	....	64,362	....
Oct.	53,595	....	73,109	....
Nov.	54,640	....	54,735	....
Dec.	.....	....	.....	....
Year	.....	....	.....	....

‡Figures by American Institute of Steel Construction, from January, 1933, 75 to 85 per cent of industry reporting.

Fabricated Plates

Net Tons Bookings

1932	Total	Oil Storage Tanks	Miscellaneous
Jan.	17,613	4,783	12,124
Feb.	17,755	4,115	11,777
Mar.	12,564	1,161	10,022
April	14,074	1,406	11,167
May	11,788	2,310	9,356
June	18,383	2,808	10,209
July	12,485	3,661	6,586
Aug.	11,916	4,394	6,911
Sept.	11,013	3,753	6,801
Oct.	16,737	5,941	9,528
Nov.	7,873	1,446	6,065
Dec.	9,510	3,154	5,534
Year	161,810	38,976	109,085
1933			
Jan.	11,128	1,501	8,830
Feb.	16,588	8,347	7,660
March	8,903	1,270	6,787
April	9,502	2,938	6,291
May	16,243	2,858	8,183
June	37,020	20,894	14,013
July	20,058	6,013	11,417
August	16,320	2,581	10,618
Sept.	16,025	1,033	13,602
Oct.	17,839	1,434	12,162
Nov.	14,466	3,734	9,466
Dec.	.....	.....	.....
Year	.....	.....	.....

Railroad Locomotives

Units Shipments

1932	Domestic	Foreign
Jan.	..	..
Feb.	1	4
Mar.	..	3
April	8	..
May	13	2
June	17	..
July	9	..
Aug.	9	..
Sept.	9	4
Oct.	10	2
Nov.	8	..
Dec.	6	..
Year	80	15
1933		
Jan.	2	..
Feb.	3	..
March	2	..
April	1	..
May	1	..
June	0	2
July	..	..
August	2	1
Sept.	2	..
Oct.	0	0
Nov.	1	1
Dec.	7	1
Year	21	5

Foundry Equipment Order Index†

1932	
Jan.	20.5
Feb.	27.6
Mar.	27.5
April	13.7
May	18.0
June	14.2
July	18.7
Aug.	18.6
Sept.	11.9
Oct.	23.2
Nov.	11.5
Dec.	16.5
Year	....
1933	
Jan.	68.4
Feb.	16.1
March	9.8
April	19.4
May	25.7
June	45.5
July	48.6
August	56.2
Sept.	34.9
Oct.	42.46
Nov.	36.62
Dec.	43.2
Year	....

†Average monthly shipments, 1922-23-24 taken as 100.

Malleable Castings

Net Tons

1932	Output	Shipments	Orders booked
Jan.	20,399	19,658	20,332
Feb.	19,834	19,432	17,808
March	17,844	19,392	16,235
April	15,461	16,847	16,185
May	16,597	18,075	16,463
June	15,018	16,450	13,330
July	9,447	11,359	8,658
August	6,804	8,631	7,776
Sept.	10,051	9,746	10,582
Oct.	12,274	11,615	12,850
Nov.	13,622	12,745	14,304
Dec.	14,128	14,366	14,504
Year	171,479	178,316	169,027
1933			
Jan.	12,577	14,248	12,404
Feb.	13,575	14,068	11,077
March	9,756	10,967	12,380
April	17,871	16,666	17,856
May	24,628	23,077	24,671
June	31,118	29,268	31,997
July	30,865	29,155	28,458
August	31,811	30,195	28,323
Sept.	27,078	25,402	22,744
Oct.	24,381	20,422	19,933
Nov.	21,903	19,722	20,776
11 Mo.	246,727	234,109	231,777

Steel Castings

Net Tons

1932	Total bookings	Total production
Jan.	17,393	18,395
Feb.	17,015	18,759
March	16,593	20,433
April	12,801	17,474
May	11,342	14,463
June	12,765	12,839
July	9,301	11,460
August	10,147	12,331
Sept.	11,883	11,337
Oct.	11,896	12,480
Nov.	13,235	13,712
Dec.	13,283	13,886
Year	155,837	175,831
1933		
Jan.	12,942	13,951
Feb.	11,857	12,438
March	11,458	13,209
April	14,507	12,071
May	20,782	19,072
June	32,026	27,300
July	29,505	29,240
August	28,962	31,157
Sept.	22,714	25,532
Oct.	23,608	25,459
Nov.	23,444	22,615
11 Mo.	231,805	232,044

(a) by 40 plants. (b) by 30 manufacturers who produce for sale, including 5 who also report consumption of own metal.

Mech. Stokers

—Sales—

1932	Fire tube boilers	Water tube boilers
Jan.	70	45
Feb.	63	26
March	60	23
April	80	15
May	41	30
June	65	48
July	70	44
August	99	38
Sept.	117	46
Oct.	96	21
Nov.	79	12
Dec.	78	20
Year	920	367
1933		
Jan.	50	13
Feb.	33	22
March	67	17
April	26	31
May	52	41
June	137	50
July	105	65
August	153	60
Sept.	146	27
Oct.	130	29
Nov.	128	40
11 Mo.	1,027	395

Steel Furniture

Dollars, 000 omitted

1932	Business shipments	Shelving, shipments
Jan.	977	269
Feb.	807	229
March	780	259
April	753	190
May	653	196
June	671	177
July	521	155
August	543	141
Sept.	577	146
Oct.	622	142
Nov.	581	125
Dec.	610	135
Year	8,102	2,166
1933		
Jan.	582	121
Feb.	464	104
March	482	137
April	404	133
May	511	166
June	636	165
July	522	156
August	693	178
Sept.	734	163
Oct.	825	146
Nov.	799	195
11 Mo.	6,657	1,670

Babbitt Metal

Pounds 000 omitted

1932	(a) Total production	(b) Sales
Jan.	1,743	1,281
Feb.	1,577	1,142
March	1,595	1,188
April	1,419	1,060
May	1,345	947
June	1,319	858
July	1,275	870
August	1,319	994
Sept.	1,406	1,108
Oct.	1,573	1,192
Nov.	1,265	944
Dec.	1,149	823
Year	16,990	12,412
1933		
Jan.	1,346	1,073
Feb.	1,117	917
March	1,134	941
April	1,544	1,270
May	2,110	1,785
June	2,327	1,877
July	2,484	1,941
August	2,753	2,059
Sept.	2,419	1,803
Oct.	2,090	1,554
Nov.	1,963	1,606
11 Mo.	21,353	16,833

(a) by 40 plants. (b) by 30 manufacturers who produce for sale, including 5 who also report consumption of own metal.

U. S. Steel Corp. Shipments

To consumers only, inter-company shipments not included

1932	Tons
Jan.	426,271
Feb.	413,001
March	388,579
April	395,091
May	338,202
June	324,746
July	272,448
Aug.	291,688
Sept.	316,019
Oct.	310,007
Nov.	275,594
Dec.	227,576
Year	3,974,062
1933	
Jan.	285,138
Feb.	275,929
March	256,793
April	335,321
May	455,302
June	603,937
July	701,322
August	668,155
Sept.	575,161
Oct.	572,897
Nov.	430,358
Dec.	600,639
Year	5,760,952

Coke

Net Tons Production

1932	By-Product	Beehive
Jan.	2,100,923	87,900
Feb.	1,995,780	85,800
March	2,089,391	87,400
April	1,883,391	56,000
May	1,742,517	45,000
June	1,536,712	41,200
July	1,523,422	38,200
Aug.	1,473,904	40,700
Sept.	1,544,491	45,700
Oct.	1,738,716	67,600
Nov.	1,751,581	81,400
Dec.	1,786,085	95,600
Year	21,166,913	772,500
1933		
Jan.	1,784,527	81,900
Feb.	1,638,817	84,100
March	1,666,035	93,300
April	1,656,183	47,000
May	1,921,257	47,300
June	2,241,432	50,100
July	2,797,316	68,400
August	2,923,418	70,600
Sept.	2,712,050	59,500
Oct.	2,581,834	45,000
Nov.	3,334,597	92,800
Dec.	.....	89,500
Year	.....	829,500

Electric Power

Millions Kilowatt Hours Production*

1932	
Jan.	7,567
Feb.	7,023
March	7,323
April	6,790
May	6,650
June	6,563
July	6,547
Aug.	6,764
Sept.	6,752
Oct.	7,073
Nov.	6,952
Dec.	7,149
Year	83,153
1933	
Jan.	6,932
Feb.	6,285
March	6,674
April	6,462
May	6,996
June	6,231
July	7,479
August	7,684
Sept.	7,344
Oct.	7,491
Nov.	7,209
Dec.	.....
Year	.....

*For public use

Steel Barrels

Units

1932	Production	Shipments
Jan.	359,685	352,135
Feb.	367,472	369,882
March	452,294	453,621
April	447,379	452,191
May	427,299	425,662
June	651,916	654,561
July	352,614	353,336
Aug.	362,993	360,509
Sept.	395,640	398,241
Oct.	422,637	417,490
Nov.	373,190	376,647
Dec.	300,570	307,372
Year	4,920,117	4,928,307
1933		
Jan.	292,201	292,609
Feb.	269,755	272,432
March	373,340	371,945
April	401,086	402,506
May	465,418	467,695
June	572,851	568,437
July	555,402	552,923
August	480,670	470,632
Sept.	519,191	524,719
Oct.	798,981	789,474
Nov.	.....	.....
Dec.	.....	.....
Year	.....	.....

River Traffic

Net Tons

1932	Allegheny	Monongahela	Ohio
Jan.	.....	25,327	45,199
Feb.	2,200	20,089	40,737
March	550	32,234	33,254
April	501	23,849	32,972
May	2,550	23,941	28,267
June	3,611	18,291	27,306
July	1,400	13,677	22,895
Aug.	3,400	26,390	43,621
Sept.	1,200	18,831	28,557
Oct.	21,280	24,305	40,399
Nov.	23,225	29,851	45,735
Dec.	7,200	28,169	30,048
Year	67,117	284,954	418,990
1933			
Jan.	1,627	11,724	18,002
Feb.	1,656	17,904	23,614
March	425	19,546	32,917
April	3,025	35,795	37,191
May	4,400	39,890	46,038
June	815	58,179	56,484
July	3,900	68,453	62,096
August	3,234	67,389	69,531
Sept.	2,000	43,026	38,480
Oct.	4,240	39,026	49,047
Nov.	1,550	28,216	39,573
Dec.	4,130	38,693	31,038
Year	31,007	467,841	509,011